ORGANIZING FOR EFFECTIVENESS:
A GUIDE TO USING STRUCTURAL DESIGN FOR MISSION ACCOMPLISHMENT

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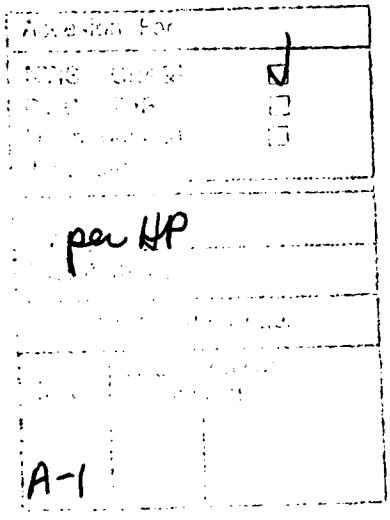
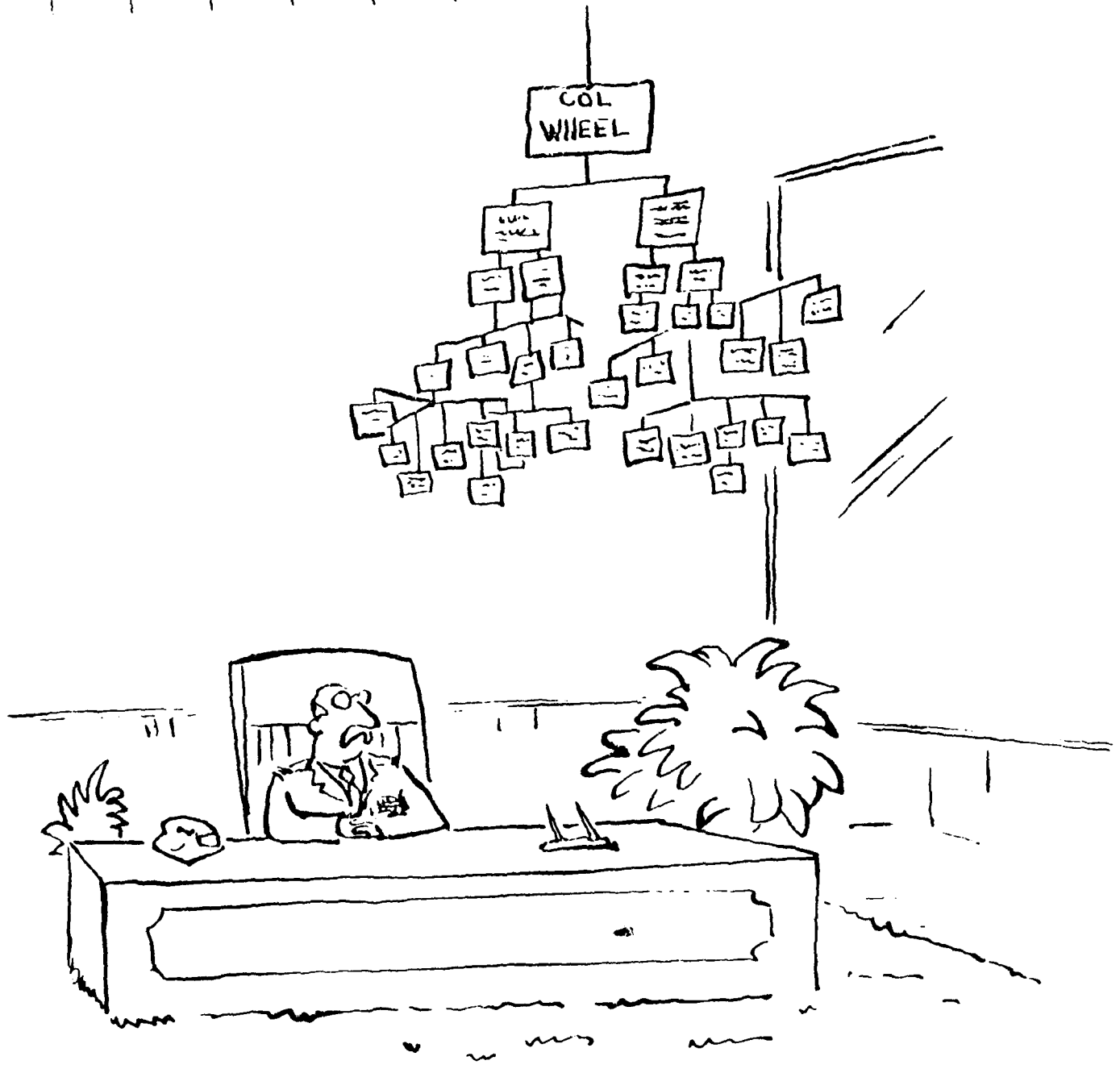
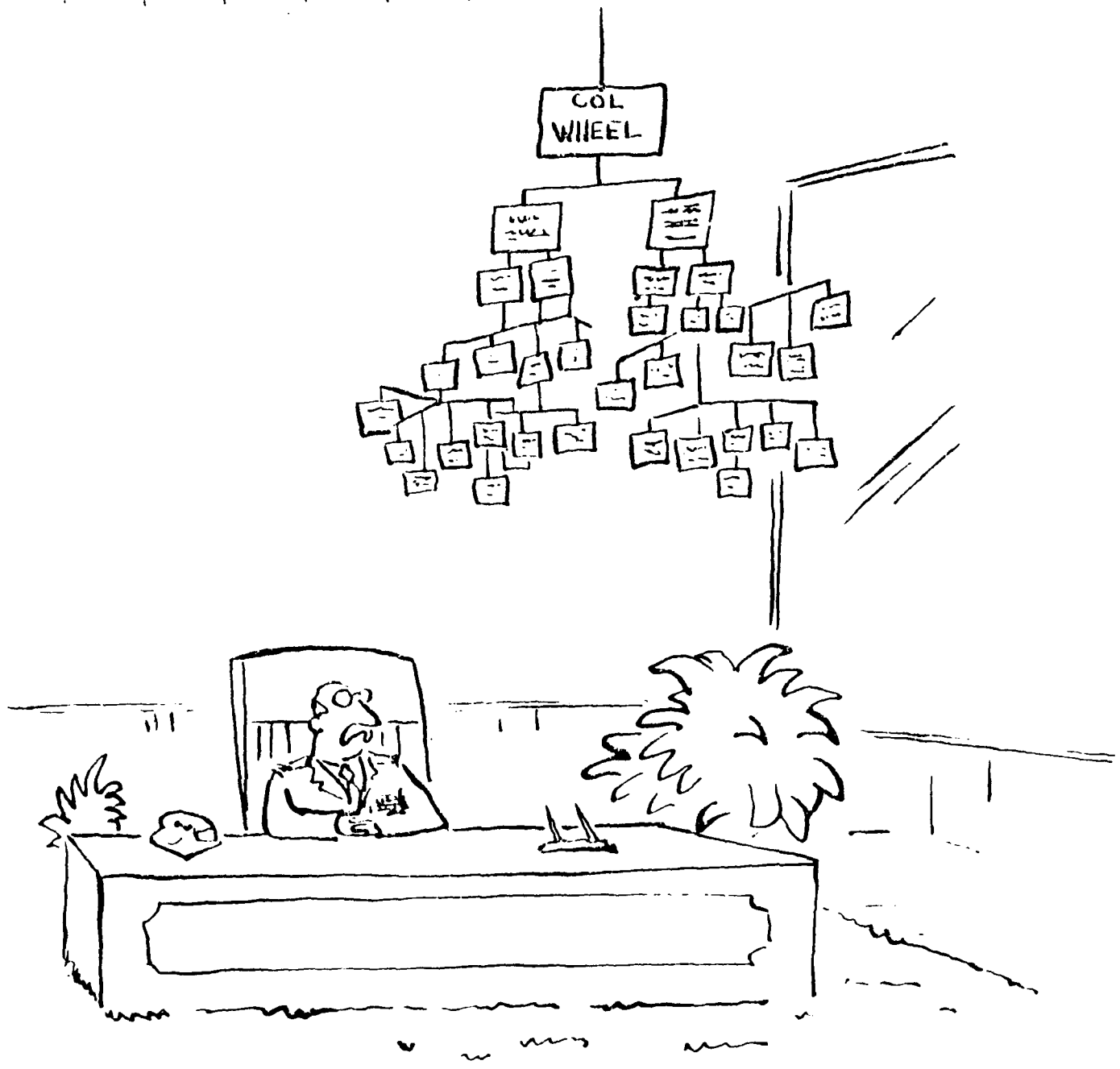




TWOHY MANAGEMENT REVIEW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I. INTRODUCTION

> General Bill Creech led a remarkable turnaround of the U.S. Air Force's Tactical Air Command. TAC has a clear peace time "product," the sortie, in which the weapon system (plane) and its pilot and support group are tested as a unit in simulated combat conditions, and a peace time "bottom line," the sortie rate. When General Creech arrived at TAC in 1978, the sortie rate had been falling for 10 years at a compound annual rate of 7.8 percent. From 1978 through 1983, it rose at a compound annual rate of 11.2 percent. It used to take about 4 hours on average to get a part to a temporarily inoperable plane. In 1984 the average was 8 minutes. Since the budget for spare parts actually decreased along the way, and other "external" factors became more adverse, the turnaround was a product of management, nothing else. At the heart of it was a simple proposition: planes fly less often than they should because of some failure not of the pilot's but of other people. Planes don't fly because, for example, the pickup truck transporting a critical part broke a U-joint in a long-unrepaired pothole while coming across the base. That is, the supply and maintenance people and their on-the-job accoutrements (and support people and equipment in general) are at once the problem and the opportunity.
>
> Amen! And how did General Creech act on this indisputable fact? He motivated, celebrated, and virtually canonized the typically unsung support people. He said, "The airplane is the customer for us." And he made heroes out of those whose mundane chores in fact most influenced his "customers'" productivity.(1)

This account of General Creech's impact on the Tactical Air Command is from Passion for Excellence. It is a story of enormous success. It is a story of inspirational leadership. General Creech improved the motivation of

aircraft maintenance technicians in hundreds of maintenance squadrons. Maintenance people were previously neglected in favor of pilots, so he set up highly visible bulletin boards that included pictures of the maintenance crew chiefs, improved their living quarters, and established decent maintenance facilities including artwork and wall murals. Competition among supply and maintenance squadrons was introduced. Trophy rooms were created to hold trophies and plaques won in maintenance competitions. The highly visible display of concern for maintenance specialists greatly increased their motivation to keep the planes flying.

The General Creech story also is a story of organization structure, and it explains why the Air Force is devoting this guide to the topic of "organizing for effectiveness." General Creech realized that TAC had been ill-served by the centralization of decision making caused by a functional "stovepipe" structure. His answer was to reorganize.

> While Creech talks ceaselessly about the importance of leadership, he also believes that leadership can't do it all: "Even the best leaders get submerged and stymied in organizations that are highly centralized, highly consolidated." His solution was to shift from the highly centralized and specialized (input-driven) structure he inherited to an output-focused organization he called POMO (Production-Oriented Maintenance Organization). ...
>
> What is the POMO magic? It's quite simple--some might say it's obvious. First and foremost, management's focus was shifted from the higher level (input-based) unit--the wing--to the lower level (output-oriented) unit--the squadron. Each squadron now does its own scheduling. It has its own decentralized computers, ... Squadron-versus-squadron comparison numbers are readily available, and intense squadron-versus-squadron competition has been introduced. ...
>
> Many other things happened in the wake of the change in organizational philosophy. Maintenance was reorganized; the decentralized squadron became self-sufficient. Parts were made available on the flight line. ... Creech's motto was "Organize as you will fight."(2)

General Creech's inspiration was a radical departure from a highly centralized and specialized organization structure to a decentralized, output-focused structure. Herein lies the rapid turnaround in TAC's sortie rate and rising morale and pride.

There are several conditions that helped the new structure have such a dramatic impact on TAC's performance. As we will describe throughout this guide, the structure was now smoothly integrated with TAC's environment, mission and production technology. Indeed, the team approach had a tremendous unifying effect on the vital human resource component, further magnifying the gains from General Creech's leadership style and new organization structure.

The new structure also meant that TAC units were now organized as they should be in the event of war. Self-sufficient squadrons are more readily deployable than are unyielding, centralized and highly specialized structures. The team orientation brought healthy competition, pride in facilities and aircraft, and true "ownership" of the product. Decentralization, in effect, told TAC's 113,000 people that leaders trusted decisions to a lower level. The structure allowed people to increase the amount of decision making and the amount of caring all the way down the chain of command.

TAC's change in organization structure was shown to increase effectiveness without sacrificing the traditional concerns for people. Indeed, the structure increased satisfaction and pride as well as performance. And it did so without additional people, without improved airplanes, with fewer parts, and with a less experienced workforce. Of course not all structural changes are as dramatic in their effect; not all are as wonderfully suited to the mission, technology, environment, and the leader's style and philosophy.

The General Creech example is important because it demonstrates the

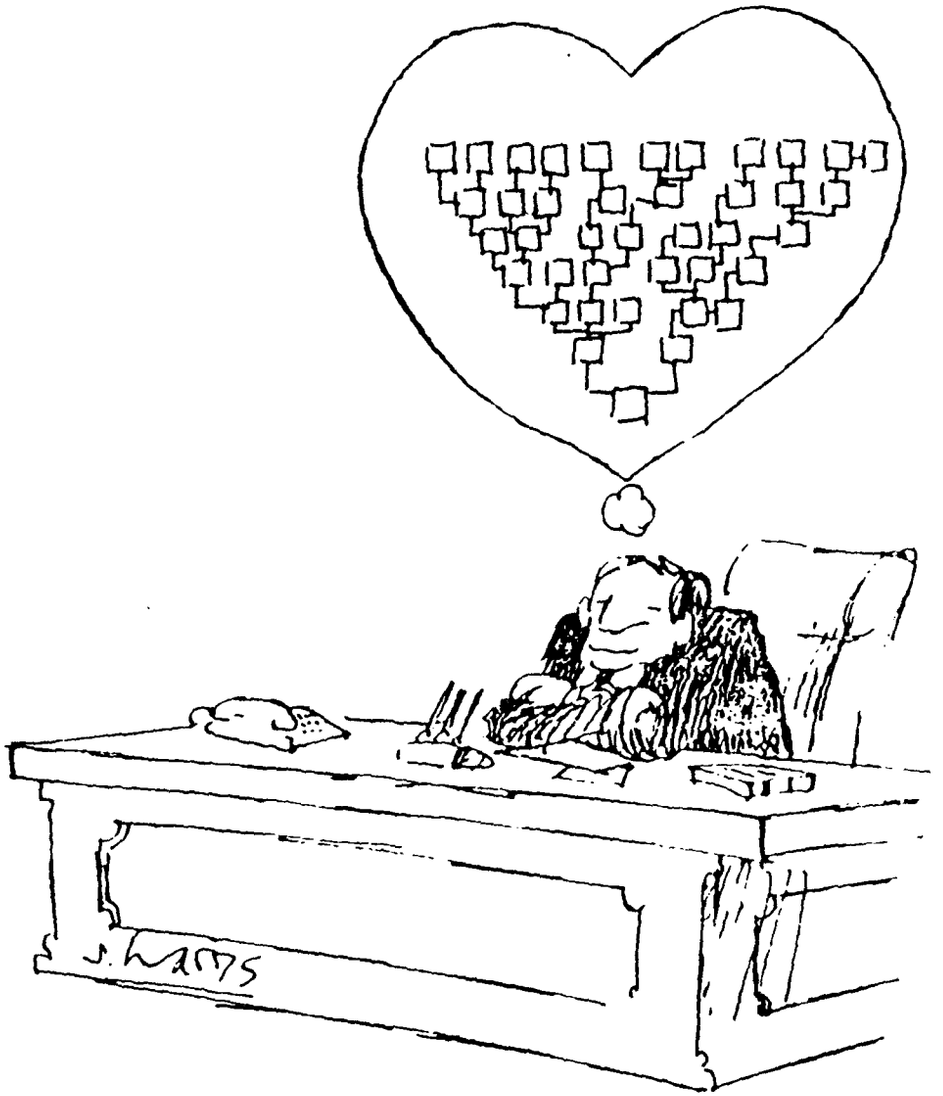
potential of organization structure for enhancing organization performance. General Creech tailored structure to the mission, and used structure to extend his leadership philosophy throughout a giant organization. An equally important point is that organization structure is not just a tool for top commanders. Organization structure also can make a difference at the wing, deputate, and squadron levels.

The purpose of this guide is to describe underlying principles that should be considered when using organization structure to solve internal problems and to enhance mission effectiveness. What do commanders need to know to use structure to increase efficiency and effectiveness? What is the right structure to fit the organization's mission, production technology, environment, human resources, and leadership style? What structuring concepts allow the greatest utilization of limited resources? Concepts and ideas provide answers to these questions and many others throughout this guide to Organizing for Effectiveness.

Air Force Perspective

Aerospace Doctrine and Air Force Regulation (AFR) 26-2, Organization Policy and Guidance (1982), stress the importance of using organization structure to integrate the efforts of military units, use the least expenditure of resources, keep pace with technological advances, and to streamline the decision making process. This manual was written to enhance the application of organizing concepts throughout the Air Force as recommended by Air Force Doctrine and AFR 26-2. To further this purpose, this guide will:

*** Describe basic principles of organization that can be



applied by commanders to solve organization problems and enhance mission effectiveness.

*** Explain differences in organizational forms that exist in the Air Force and the relative strengths of each.

*** Describe the organizational circumstances--mission, workflow, environment, leadership, human resources--most appropriate for each organizational form.

*** Provide "Rules of Thumb" to help commanders apply organizational principles and discern when a change in organization structure may be necessary.

*** Describe a procedure for creating an organization for a new weapon system and for reorganizing Air Force units.

*** Provide answers to frequently asked questions about organization structure.

II. ORGANIZING: WHAT IT'S ALL ABOUT

Let's begin with our most important point: organization structure is a tool to get things done. An organization's structure is not an end in itself. It is not sacrosanct. Organization charts are frequently standardized, but there is still room for flexibility. Organization structure is part of each commander's management tool kit that can be used to direct and coordinate human and physical resources toward mission objectives.

Elements of Organizing

Consider how organization structure might evolve to accomplish a unit's mission. Initial task requirements are illustrated by the "task" in Exhibit 1.

1. The first element of organizing is to define the subtasks to be performed by individuals and departments. Subtasks are defined based on efficiency and common skill requirements. But the subtasks are not independent; they are part of the larger organization and directed toward the overall mission.

Exhibit 1 about here

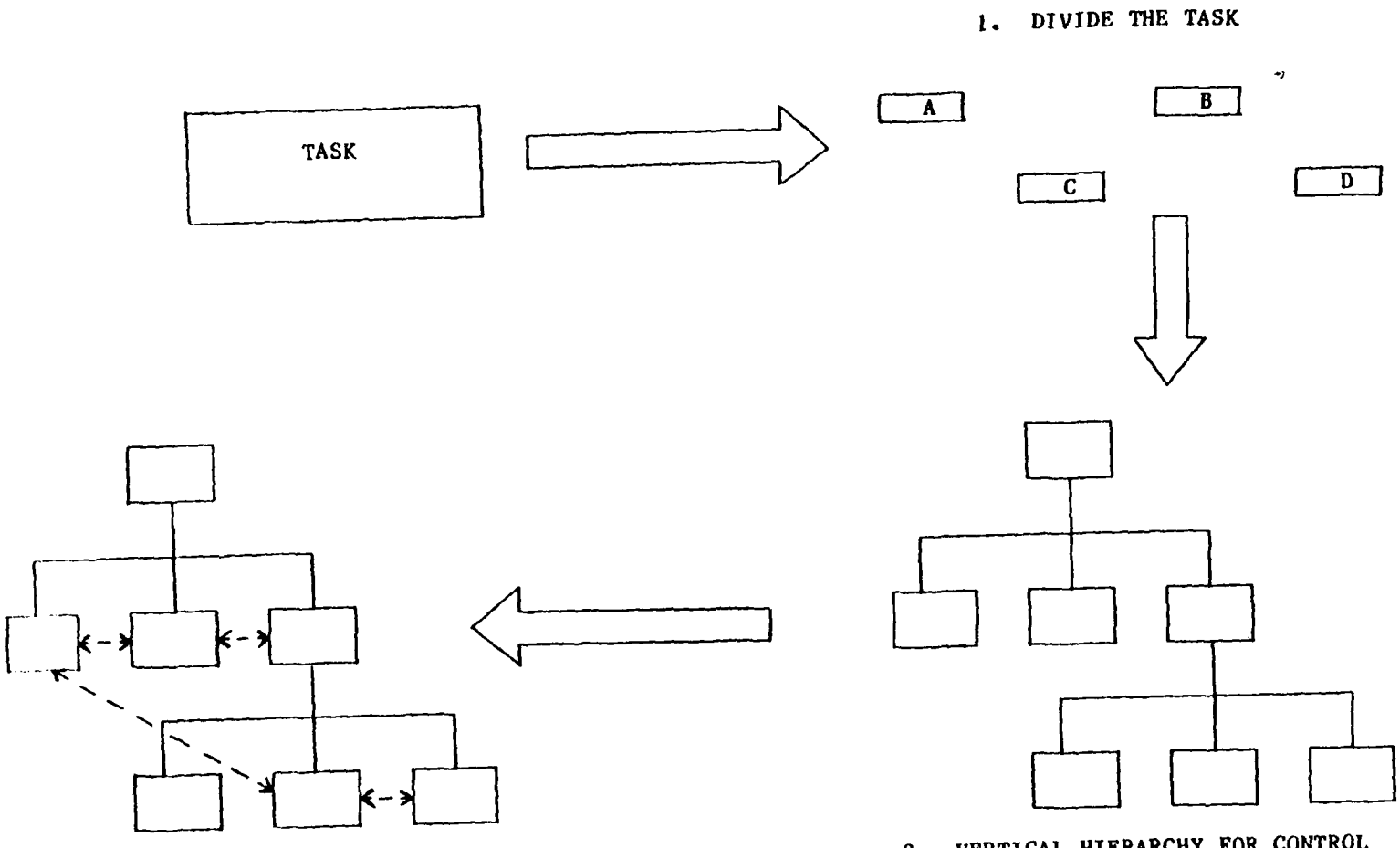


Exhibit 1. Evolution of Organization Structure.

2. The second element of organizing is to install a hierarchy of authority. The purpose of the vertical hierarchy is control, but it is also a medium for providing direction, vertical communication, and some coordination. For most organizations, however, the hierarchy alone cannot organize and coordinate all tasks sufficient for mission accomplishment.

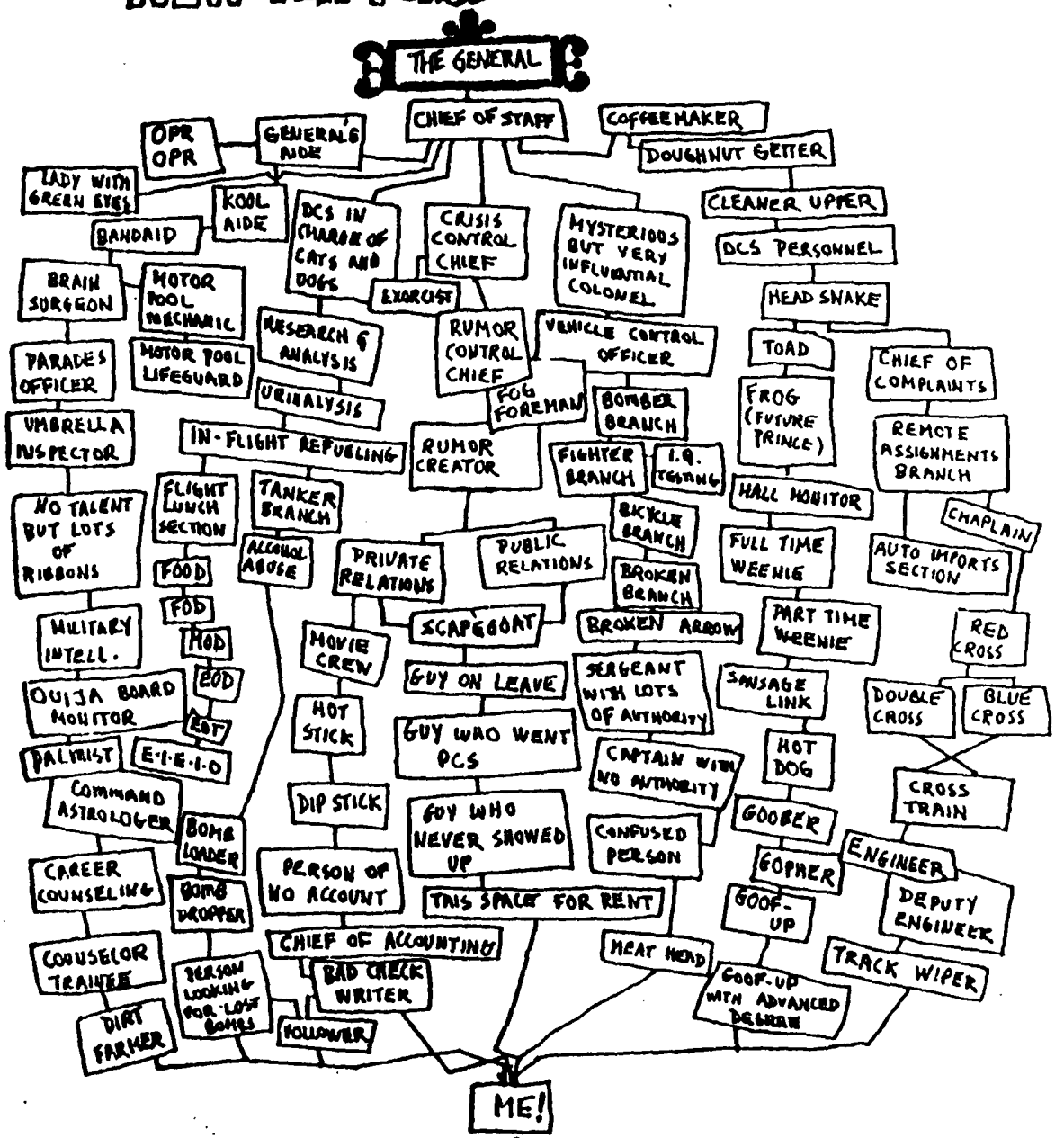
3. This brings us to the third element of organizing, which is to implement specific devices for lateral coordination. Lateral coordination means coordinating horizontally across squadrons or divisions. People in Division A may have to talk directly to people in Division B to resolve joint problems, because formal directives from top management are not comprehensive, and going through formal channels for every decision takes too long. Lateral coordination techniques include task forces, committees, teams, liaison persons, and project officers. Commanders often overlook lateral organizing as a tool to make structure work for them.

RULES OF THUMB: 1. Vertical organizing provides control over department and individual tasks.

2. Lateral organizing provides coordination across departments.

In almost every Air Force organization, the elements of organizing are already established. The overall task has been subdivided into a well defined division of labor, the vertical hierarchy is in place, and lateral coordination techniques are used as needed. So why should anyone need to understand structure? The reason is that existing structures frequently are not designed to do the current job. Tasks change, leaders change, regulations change, production technologies change. The structure has to change or it will be out of alignment. If the structure does not fit the organization's situation, it will impede rather than improve performance.

NEW AIR FORCE ORG CHART



Many managers take organization structure for granted. Or they accept it as a necessary evil and don't try to change it. Or they become frustrated and try to work around it. Managers may try to improve performance by working through people or through new technologies rather than by reorganizing. The point of this guide is that structure need not be taken for granted, or ignored, or be a source of constant frustration. Let's repeat the important point made in this guide: organization structure is a tool to get things done. Managers can use structure just as they use people and planning for task accomplishment, as illustrated in Exhibit 2. In the remainder of this guide we are going to describe several perspectives on structure so that Air Force managers will appreciate the range of options in their tool kit. The Air Force is a huge organization, containing many variations in structure. Once structural options are understood, they can be adopted and used by managers throughout the Air Force.

Exhibit 2 about here

Organizing for Vertical Control

When leaders are frustrated with organization structure, frequently the cause is the rigid organization chart and the accompanying rules and regulations. Formal rules and regulations lead to a sense of bureaucracy and red tape. However, basic principles of vertical organizing are useful management guidelines, and we will briefly review five of them here.

1. Unity of command. This principle means that the responsibility for each task must be clearly assigned to one person, and each person is held accountable to only one superior. Unity of command means there is a well-

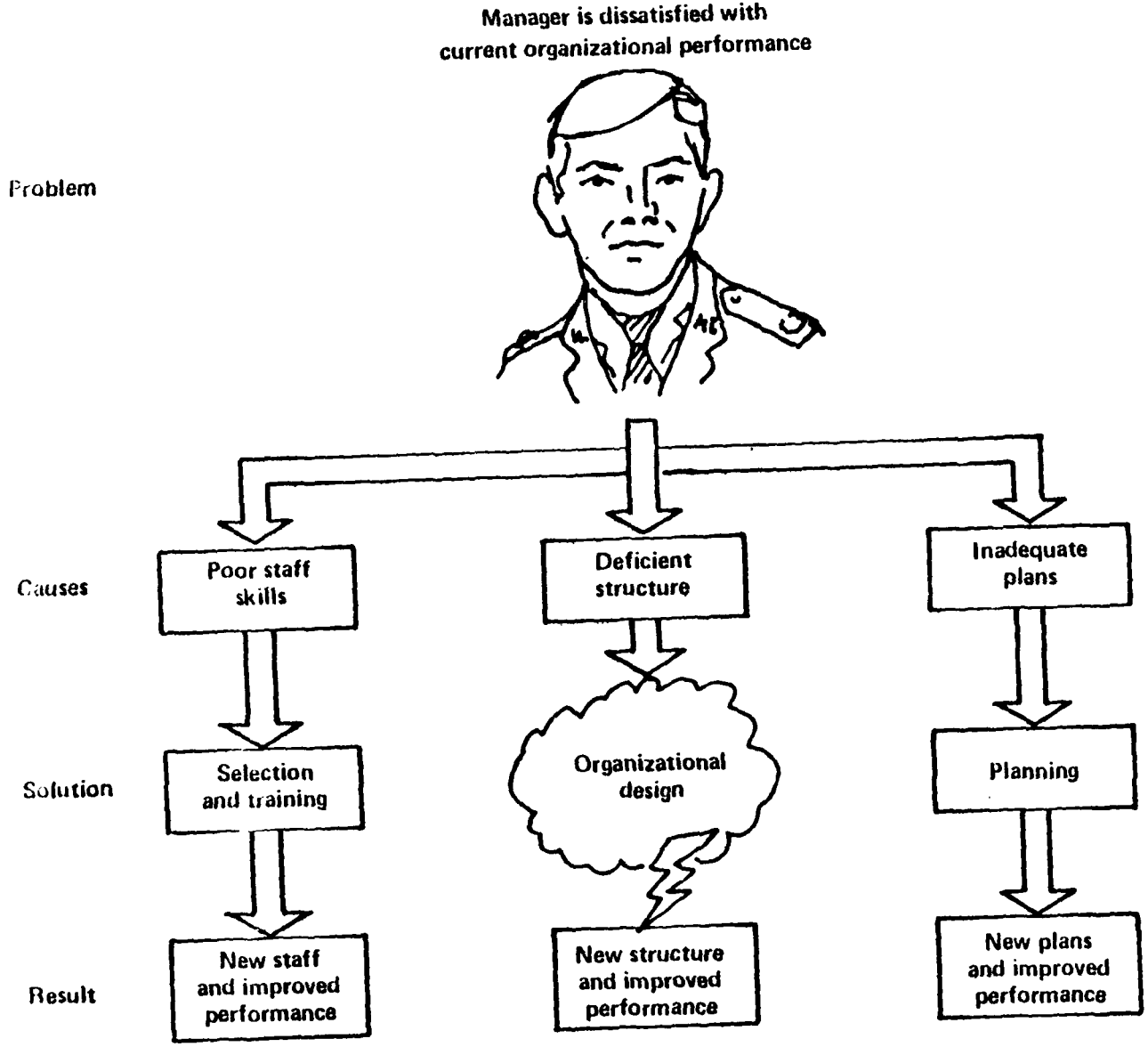


Exhibit 2. Structure is a Tool to Improve Performance.

defined hierarchy of authority running from the top to the bottom of the organization. Tasks and responsibilities should not overlap. In today's complex organizations, responsibilities sometimes overlap and dual reporting may occur. But unity of command is an important principle that clarifies the command and control structure.

2. Span of control. Span of control is the number of people reporting to a superior. There is no precise formula for calculating span of control. Smaller spans typically are used when greater supervision is needed. Smaller spans are preferred when tasks are complex, and when subordinates need greater supervision. Span of control should be as large as practical, which can mean having thirty or more subordinates reporting to a superior when tasks are routine and subordinates are well trained.

3. Delegation of authority. The strategic control of aerospace power is typically centralized to a single commander who directs the deployment of forces. The execution of operations is delegated to the most effective level. Commanders retain strategic control, but delegate operational tasks and decisions to lower levels. The authority to make an operational decision should be delegated to the lowest level where all information needed to make the decision is available. Delegation of authority should be used as much as possible because it streamlines the organization structure and speeds decision making by preventing decisions from piling up at the top of the hierarchy. If centralization is too great the system will become clogged and decisions will be delayed.

4. Division of labor. Division of labor is the degree to which organizational tasks are subdivided into separate jobs. When specialization is extensive, employees perform standardized tasks. The division of labor leads to specialization, and enables tasks to be performed in a routine

manner. Division of labor also provides greater control over tasks because they are more predictable. There is a place for everything and everything is in its place. However, *too* great a division of labor leads to departments that do only a single task and jobs that are repetitious and boring. Division of labor, although necessary, should not be carried to an extreme. When departments have diverse tasks, employees often can identify with a whole unit of work and feel more challenged by their jobs.

5. Rules and regulations. Rules and regulations are not on the organization chart, but they provide written definitions for positions, roles, tasks, and activities. Rules and procedures include job descriptions and policy manuals that prescribe employee behavior. Larger organizations use rules to improve standardization. Rules and regulations also provide information to support the vertical organization structure and provide direction and control.

These five principles of organizations are just that--principles. They are conceptual ideas that provide a frame of reference for vertical organizing and control. They provide order and logic for an organization. Every employee has an appointed task, line of authority, and decision responsibility.

Exhibit 3 about here

So, principles of organization are nice for creating the basic vertical structure of an organization, but ... they also lead to problems. These problems were described by Harold Geneen, who built ITT into one of the world's best run corporations.

An organizational chart delineating the structure of a

Exhibit 3. Vertical Organizing Includes:

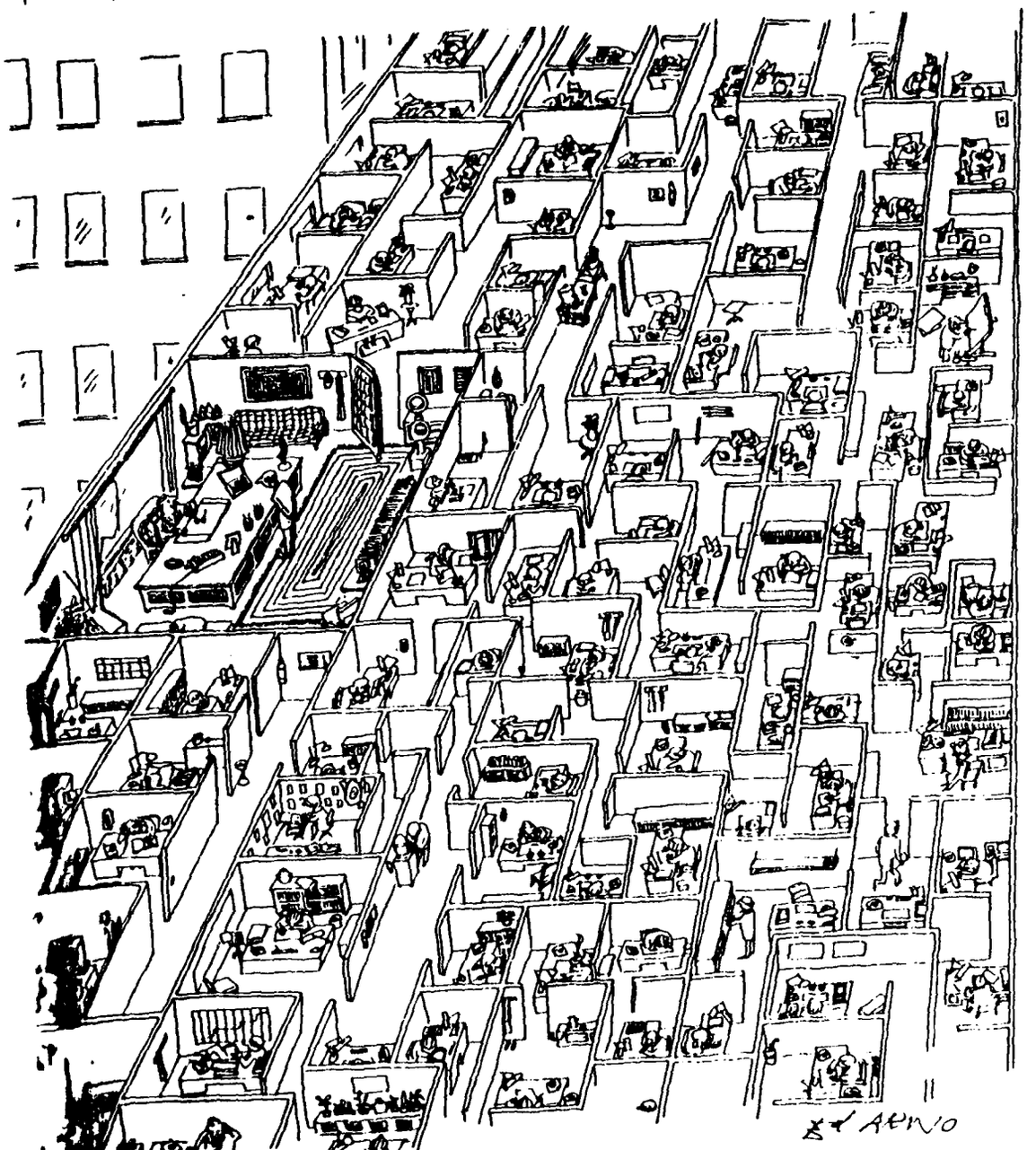
1. Unity of Command
2. Span of Control
3. Delegation of Authority
4. Division of Labor
5. Rules and Regulations

> company is absolutely essential...the organizational charts are designed to do the same task: to tell who is in charge of what and who reports to whom.
>
> The formal structure of a company is almost always designed in the shape of the familiar pyramid. That structure defines the regular chain of command. Information flows up the chain and orders flow down. Everyone knows his or her place and responsibility in the hierarchy. Logic and order are supposed to reign supreme.
>
> While there is logic and reason to it, the system never satisfied me. It has in it all the seeds of bureaucracy...In some of our larger companies it can take as long as six months for a decision to be made. Everything must work its way up through the chain of command and back down again. Managers often become paper pushers. Reports stack up, recommendations are made warily, decisions are delayed, actions are not taken. The company stagnates...
>
> Without a formal structure and chain of command, there would be chaos. With it, however, there is the danger that each box on the organization chart will become an independent fiefdom, with each vice president thinking of his own terrain, his own people, his own duties and responsibilities, and no one thinking of the company as a whole. What tends to happen is that one man says, "My job is to do this, and that's all I know." The next man says, "My job is to do that and I don't know anything about his..." And so it goes...(3)

Geneen's experience points out that vertical organizing is great for control, but it creates other problems.

Problem 1. An organization that takes vertical principles literally will be brittle and inflexible. Vertical organizing creates what General Creech called, "functional stovepipes." The organization will prefer order to disorder, and change will be difficult. Every decision will be made at the appointed place. Communications will be formal, following vertical lines of authority. People will see only small tasks for which they are responsible, and will not adapt to the larger needs of the organization.

Problem 2. Vertical organization structure creates barriers among organizational subunits. People identify with their own departments. They



"I'm afraid a raise is out of the question, Benton, but in view of your sixteen years of service we are advancing you two spaces."

adopt a frame of reference relevant to their department, which often is at odds with other departments. Thus the vertical hierarchy, which intends to create order, sews seeds of conflict and disagreement. People in one part of the organization do not see or appreciate the needs of people in other parts of the organization. Conflicts ensue.

RULES OF THUMB: 1. Principles of vertical organization provide top down control but create resistance to change and build walls between departments.

2. Principles of organization are frequently violated in high performing organizations. Principles are "ideal" not real.

The challenge for leaders is to use the vertical structure to achieve control, without creating negative side effects. Using vertical structure is not just a matter of imposing tight control, but finding the correct amount of vertical control for the situation. Some situations demand more control than others, and some situations demand more cooperation across departments. The vertical structure does not work by itself in organizations. It works in conjunction with lateral relationships that can partially offset the disadvantages of the vertical hierarchy.

Organizing for Lateral Coordination

Recent thinking in organization design has revealed the existence of a lateral structure within organizations. Lateral organizing has not achieved the status of "principles," but nevertheless is an important part of organizing. Later l organizing includes task forces, teams, and project officers. These structural devices are used to overcome the problems inherent in vertical structures. Lateral structures keep the organization from

becoming rigid and stale, and they break down barriers across departments that cause conflict and disagreement. Lateral structures typically are not drawn on the organization chart. They represent every day, informal communications among employees. These working relationships span departmental boundaries. Lateral relationships achieve the coordination, agreement, and unity of understanding needed to accomplish the organization's mission.

The term most often used to describe lateral organizing is "coordination." A great deal of organizational effort goes into coordination, and it is vital. The important thing is that coordination can be designed into the structure as surely as the vertical chain of command. When coordination is missing, the organization may act like Chrysler Corporation did when Lee Iacocca took over.

> What I found at Chrysler were thirty-five vice presidents, each with his own turf. There was no real committee setup, no cement in the organizational chart, no system of meetings to get people talking to each other. I couldn't believe, for example, that the guy running the engineering departments wasn't in constant touch with his counterpart in manufacturing. But that's how it was. Everybody worked independently. I took one look at that system and I almost threw up. That's when I knew I was in really deep trouble.
>
> I'd call in a guy from engineering, and he'd stand there dumbfounded when I'd explain to him that we had a design problem or some other hitch in the engineering-manufacturing relationship. He might have the ability to invent a brilliant piece of engineering that would save us a lot of money. He might come up with a terrific new design. There was only one problem: he didn't know that the manufacturing people couldn't build it. Why? Because he had never talked to them about it.
>
> Nobody at Chrysler seemed to understand that interaction among the different functions in a company is absolutely critical. People in engineering and manufacturing almost have to be sleeping together. These guys weren't even flirting!
>
> Another example: sales and manufacturing were under the same vice-president. This was inconceivable to me

> because these were huge and primarily separate functions. To make matters worse, there was virtually no contact between the two areas. The manufacturing guys would build cars without ever checking with the sales guys. They just built them, stuck them in a yard, and then hoped that somebody would take them out of here. We ended with a huge inventory and a financial nightmare.(4)

How can a manager create a lateral structure for coordination? Consider the following examples from the Air Force.

** At an AFLC base, integer teams were created to ensure the speedy disposition of critical supply parts. Each team had members from several departments.

** At a SAC base, a scheduled weekly meeting of operations and maintenance personnel was used to quickly resolve problems associated with equipment modifications.

** At an ATC base, portable radios were used to keep senior officers in continuous communication. Each officer could overhear other conversations so that maintenance, operations, and support groups were always informed of other activities.

** At a MAC base, there were no formally scheduled teams or task forces, but people at lower levels were encouraged to cross organizational lines to resolve problems. Approximately 80 percent of the problems were handled this way rather than sending them up the hierarchy.

** At an ATC base, a project officer was assigned to coordinate an open house. The wing commander also established a large committee to coordinate all aspects of a base reunion.

** Colocation is used at many AFSC and SAC bases to achieve coordination between support specialists and line operations. Assigning a supply person to the flight line, or an engineer to a systems acquisition project, provides a close working relationship and greater responsiveness to user needs.

** The wing commander at a European base believed in locating managers' offices close together so they could "walk in and talk." This commander would also locate people around the meeting table so they sat next to others with whom coordination was important.

These practices--teams, scheduled meetings, direct contact, project officer, colocation--and many others can be used to achieve lateral working relationships. In many Air Force organizations, 70-90 percent of problems are resolved laterally. Lateral devices often are considered "informal" because they are not on the organization chart, nor are they part of the traditional command structure. The important thing is that lateral relations can be designed by leaders. This is where a commander at any level can make a difference. Commanders can find ways to get people together in the pursuit of the organization's mission. Coordination techniques can generally be organized into three classifications.

1. Team-based lateral relations. These include groups, teams, task forces, and committees of all kinds. The distinguishing feature is that the team has a representative from several departments. Each team member represents the objectives of his or her department and the team acts as a communication channel between departments. Many teams are temporary. The integer teams used in AFLC are an example of a team-based lateral structure.

2. Individual based lateral relations. These include project officer, coordinator, liaison officer, and colocation. The distinction here is that a single individual has the responsibility to coordinate among two or more departments for a specific activity.

3. Communication based relationships. These include routed written memos, sign off sheets, radio networks, and staff summary sheets. The distinction here is that specific individuals or groups are not given coordination responsibility. Rather, individuals who need to be informed are kept informed through a lateral communication network.

Exhibit 4 about here

Lateral relationships often represent the "discretionary" structure for commanders, because they have more freedom to make changes than in the vertical structure. It is a mistake not to use lateral relationships to enhance mission effectiveness. The selection of a coordination technique should fit the problem at hand. Teams typically provide stronger coordination than individual based relationships, but the amount of time and resources consumed are also greater.

The application of these coordination structures can reflect the following rules of thumb.

RULES OF THUMB: 1. When the issue to be coordinated will entail disagreement, multiple points of view, and conflicting interests among departments, team based structures are appropriate. The team structure facilitates two way discussions, mutual understanding, and compromise. The team structure provides the ability to resolve conflicts between departments. Team based structures are used for large, important projects that affect several departments.

2. When a coordination task is sufficiently important that someone is assigned responsibility, but not so large and complex that multiple departments are involved simultaneously, then individual-based structures are appropriate. A project officer or liaison officer can achieve the necessary coordination.

Exhibit 4. Types of Lateral Relations and When to Use.

1. TEAM BASED: Team, Task Force, Committee, Group	Large, complex issue; conflicting objectives among several departments; multiple viewpoints, disagreement.
2. INDIVIDUAL BASED: Project Officer, Coordinator Liaison Officer, Colocation	To assign individual responsibility; moderate sized issue affecting two or more departments.
3. COMMUNICATION BASED: Routed Memo, Radio Net, Sign-off Sheet, Summary Sheet	To keep people informed; one way communication for routine data.

3. When the purpose of coordination is to keep people informed or to pass data one way, then communication-based devices are efficient for coordination.

A point to remember is that a typical organization has several coordination structures working simultaneously. They are created when needed, and are disbanded when the task is finished. Moreover, two or three lateral structures can be used in sequence to accomplish a project. In the initial planning stage of a major weapon modification, team-based structures are required to resolve differences and work out a plan of action. Once participants are in agreement, written communications are all that is needed to schedule the planned activities. Scheduling and control can be delegated to a single individual project officer as the project scope diminishes. The range of horizontal coordination devices leads to our next rules of thumb.

RULES OF THUMB: 1. Commanders can change lateral relations more easily than vertical structure.

2. Be flexible in application of coordination devices. Use trial and error. See what works. Team and individual based relationships can solve temporary problems that require coordination.

Commanders at all levels can have major impact on how well subordinates cooperate to achieve a common objective. Coordination structures can be raised to formal status, or kept informal. Many social benefits accrue from the use of coordination devices. Employees from several departments learn to work together. They see other points of view, learn about the needs of other departments, and enjoy the team responsibility to solve a problem. Lateral structures represent significant tools in the management tool kit. Use them.

As a cautionary note, the use of lateral coordination relationships can

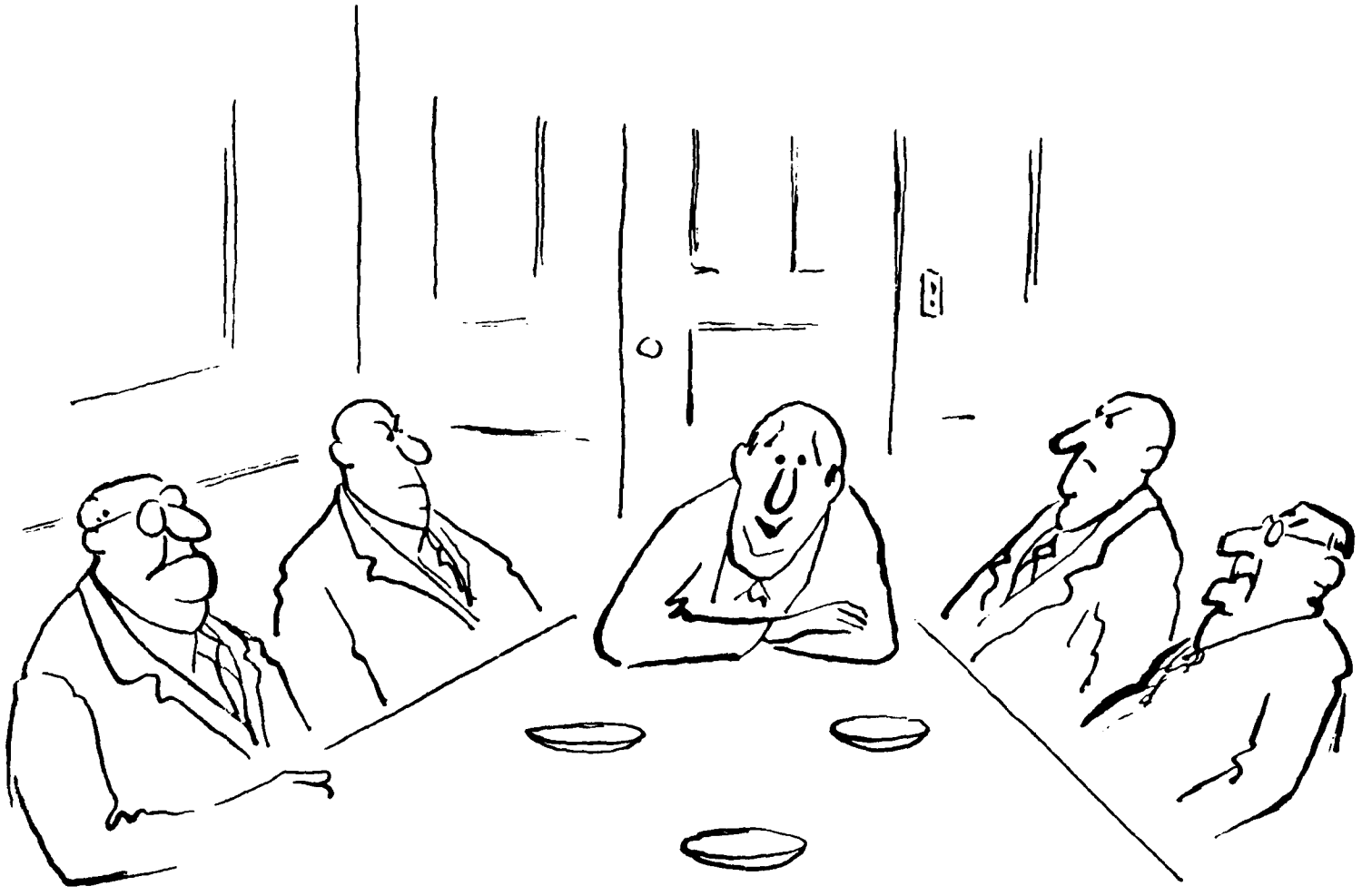
cause problems if misused or overused. Lateral relationships have the potential to help the organization adapt to change and break down barriers between departments, thereby overcoming problems inherent in vertical structures. Lateral relationships also can have unintended consequences.

Problem 1. Lateral relationships take time. Team-based relationships involve several people who must attend meetings. Participants may find that meetings distract from their primary mission. Lateral relationships thus can consume a large amount of resources. Moreover, if a team or committee does not have a challenging task, participants may feel they are wasting time and that the project is a sham. Overuse, especially of team-based relationships, can create dissatisfaction and lower productivity.

Problem 2. Improved lateral coordination may decrease vertical control. Lower level managers will resolve problems through direct discussion, and will not need to go to higher levels for help. Direct communications can leave top managers out of the communication loop. Lateral structures encourage decentralization. Senior managers may feel they have less responsibility and less to do when effective lateral relationships are in use. If central control is essential, lateral relationships should be kept to a minimum, or they should be designed to keep top leaders involved and informed.

Skills Required for Coordination

The traditional management skills used to run the vertical hierarchy include organizing, planning, decision making, staffing and controlling. While these skills are relevant for coordination across departments, additional skills are required. Coordinators frequently work with peers of equal rank, and hence are unable to acheive their ends through the use of



"Gentlemen, instead of trying to mediate this thing, why don't you just slug it out?"

formal authority. Successful coordination is typically associated with the following behavioral skills.

1. Coordinators rely on personal competence and expertise rather than on positional authority. Coordinators have a broad knowledge base about the issues and departments to be coordinated. In addition to expertise, coordinators sometimes rely on the persuasiveness of their own personality. Consider this comment from a new product team member in a business firm:

> "My key frustration is that I do not have the authority over the people I must deal with. I cannot yell at the research guy. I have to try to influence him by being persuasive. My major tool is strictly my personality."(5)

2. Coordinators of major projects must have balanced loyalty and work orientation. They need the perspective of a generalist rather than a specialist, and should not identify or champion the goals of a single department. Their primary responsibility is for the overall project and balancing the interests of participating departments.

3. Coordinators must have a capacity for resolving interdepartmental conflicts and disputes. Rather than avoiding or smoothing over conflicts, successful coordinators use a confrontation technique. Confrontation means placing all relevant facts before the disputants and jointly finding a solution. Solving conflicts involves extended discussion. Coordinators need the social skills and poise to confront and resolve conflicts. One successful coordinator explained their meetings this way:

> "Our problems get thrashed out in our committee, at our level. We work them over until everybody agrees this is the best effort we can make. We all have to be realistic and take the modifications sometimes."(6)

4. Coordinators must contribute as a team member or team leader rather

than as an autonomous individual. Team skills, such as knowing how to participate, being able to run an effective meeting, being committed to the group project, and accomplishing goals through other people are important coordinator skills.

5. Coordinators need to be rewarded for the success of their interdepartmental projects rather than solely on the basis of their performance as individuals. The reward pattern reinforces the application of broad knowledge, balanced goal orientation, confrontation, and team participation.(7)

III. ORGANIZATIONAL CHARACTERISTICS THAT INFLUENCE THE CORRECT STRUCTURE

Organizations reach an equilibrium between vertical control and lateral coordination. In some organizations the vertical structure will be emphasized and little lateral coordination will be used. In other organizations, strong lateral coordination mechanisms will be implemented, and the vertical hierarchy will not be emphasized. The difference in the balance between vertical and horizontal structure depends on the organization's situation.

Exhibit 5 illustrates how organization structure links together other organization characteristics. Organization structure should fit the organization's environment, production workflow, leadership style, goals, and human resources. These organizational characteristics determine the need for structure. The correct structure ties together these characteristics and facilitates mission accomplishment.

Exhibit 5 about here

Organization structure is interdependent with other parts of the organization. Modern approaches to organization design see a successful structure as congruent with other characteristics. The choice of how an organization should be structured with respect to vertical and lateral

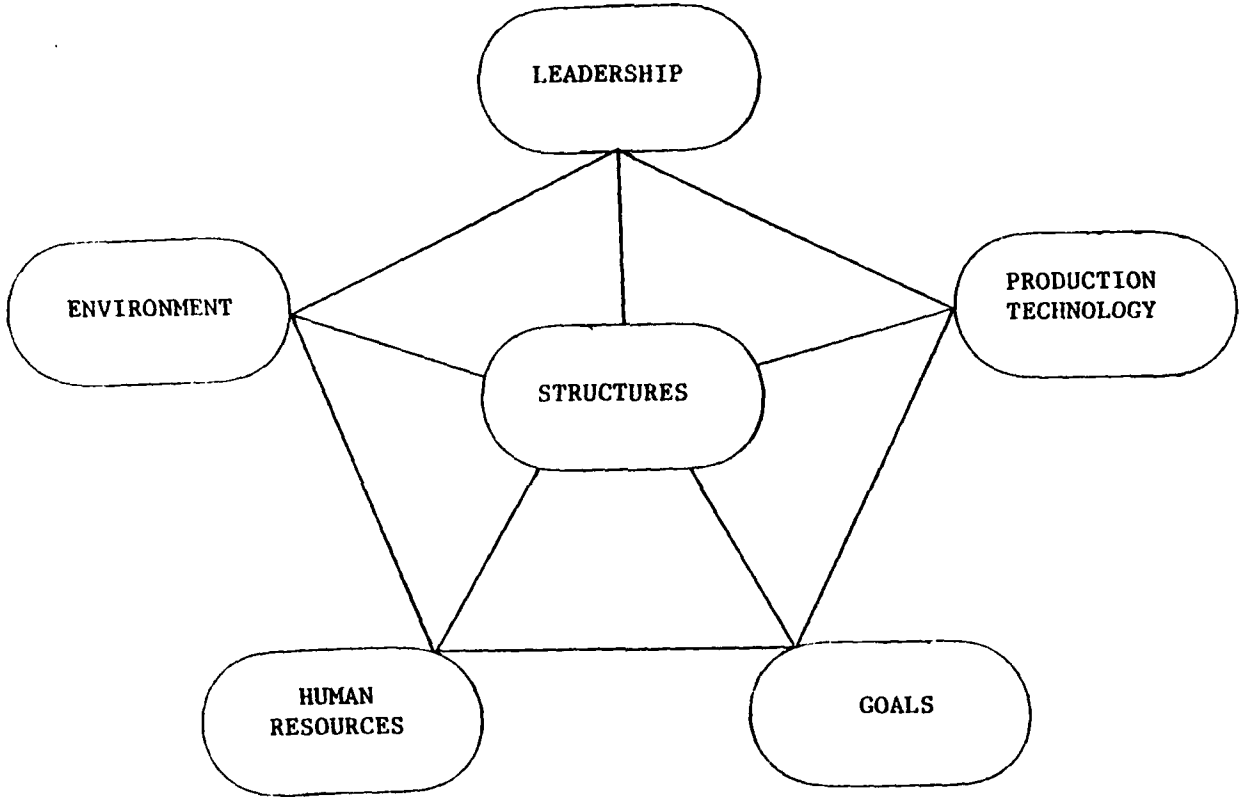


Exhibit 5. Organization Structure Ties Together Other Organization Characteristics.

processes are part of the strategic decision process. The choice of structure cannot be made independently of decisions regarding organizational goals, production technology, the environment, human resources, or leadership.

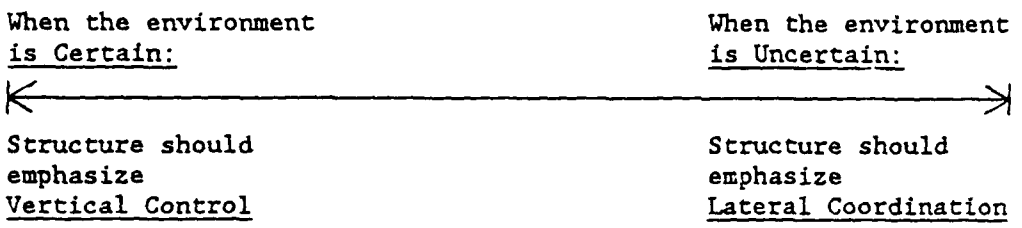
In very general terms, the five organizational characteristics in Exhibit 5 determine whether the organization should emphasize vertical control or lateral coordination.

1. Goals and objectives. In many organizations the primary goal is internal efficiency, which often includes high volume and low cost output. In other organizations the primary goal is change and flexibility, which includes mobility and rapid response. When goals emphasize internal efficiency for the organization to accomplish its mission, then the structure should emphasize vertical control. When the goal of an organization is to be flexible, mobile, and adaptable, then less emphasis is given to vertical control and more emphasis is given to lateral coordination.

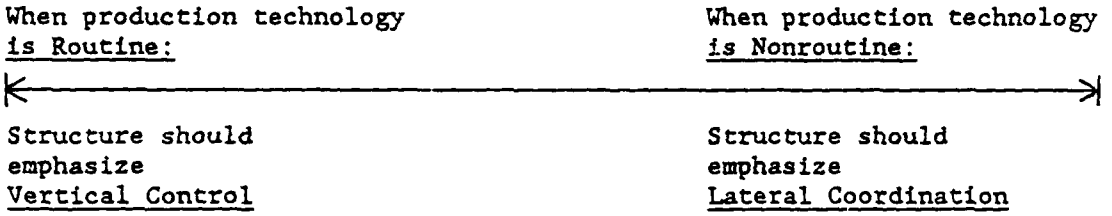
When the mission emphasizes Efficiency Goals:	When the mission emphasizes Flexibility/Change Goals:
←	→
The structure should emphasize Vertical Control	The structure should emphasize Lateral Coordination

2. Environment. The environment of an organization consists of those elements outside of its boundary that influence its behavior. Some organizations have highly uncertain environments, with frequent changes in resources, regulations, and user expectations. An organization in this environment typically needs to stress lateral coordination. Teams and task forces will be created to address changing problems. Some environments are stable, predictable, and change only slowly. The more stable the external

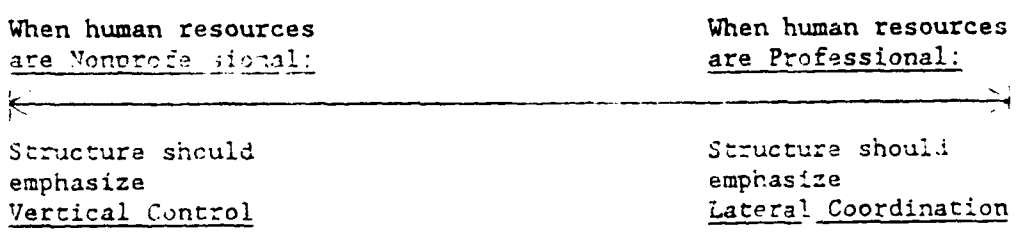
environment, the more the organization can emphasize vertical structure as the primary means of organizational control.

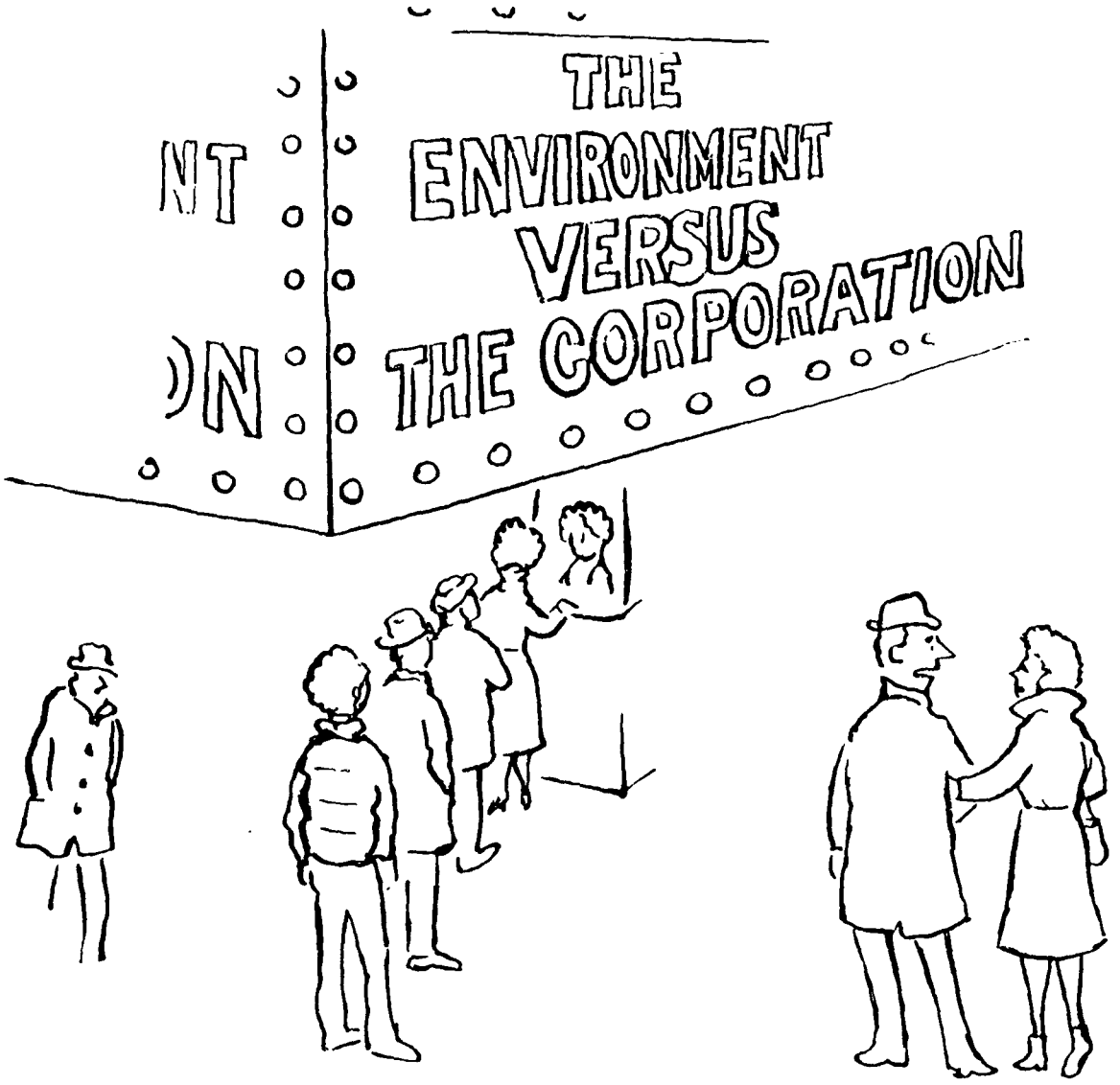


3. Production technology represents the organization's workflow. When the workflow is routine, standard, and well understood, then the use of vertical structure is paramount. When production workflows are nonroutine, sophisticated, and highly interdependent, however, the organization structure needs to make frequent use of lateral relationships for coordination.



4. Human resources represent the manpower available to the organization. To the extent that human resources are plentiful, and are mature, professional, and highly educated, then the organization can utilize lateral coordination devices. When human resources are in scarce supply, or when they have less training, professionalism, experience, and maturity, then emphasis on vertical structure is appropriate because employees are less autonomous.





"Whatever happened to the good old cowboy movies?!"

5. Leadership represents the basic style or philosophy that top management wishes the organization to have. When leadership style reflects a top down, nonparticipative management approach, then vertical structure is effective for communicating this philosophy throughout the organization. When top management wishes to establish a philosophy of participation, trial and error, and employee development, then the use of teams, task forces, and other lateral devices are powerful ways to communicate this philosophy through the organization.

When leadership style is Nonparticipative:	When leadership style is Participative:
←	→
Structure should emphasize Vertical Control	Structure should emphasize Lateral Coordination

The decentralized, team-based structure implemented in TAC by General Creech illustrates these principles. General Creech's leadership style was highly participative, and he wished to impose this philosophy on the organization. Moreover, the environment was uncertain, with each wing having to deploy at a moment's notice. The primary goal was to be flexible and adaptable rather than to maintain stability and efficiency. The human resources were somewhat inexperienced, but the importance of the other factors meant that they should be given autonomy and greater decision making responsibility. It did take the crew chiefs and other maintenance people a few months to get comfortable with the new structure. But within a year, the improvement in TAC's sortie rate was obvious.

The same principles also apply to organizations in the private sector, such as the First National Bank.

First National Bank. The relationship between

organizational characteristics and the use of vertical versus lateral structures are illustrated in the changes taking place in the banking industry over the last ten years. First National Bank is medium sized, and succeeded in the early 1970s by emphasizing vertical structure. The primary goals were internal efficiency and safety. Decisions were centralized to top managers, and standard procedures guided most activities. A fixed set of routine banking services were offered to the public. Vertical communication and "following the rules" were deemed a safe and responsible management approach for the community bank.

Dramatic changes in the banking industry have changed the approach to structure. Deregulation has changed the environment and enhanced competition, so banks and other organizations now have the freedom to become financial supermarkets. New electronic technologies combined with new services have caused the production workflow to become sophisticated and complex. The infusion of college educated management trainees has increased the quality of human resources.

To cope with these new uncertainties, First National Bank decentralized decision making by creating lateral structures. An asset-liability committee was created to help the bank make the transition to variable-rate loans and to make loans according to profit margins. Project leaders were assigned to implement new technology such as automated tellers and the automatic transfer of funds. Committees and task forces were established to investigate new products such as money market accounts, discount brokerage services, and retirement accounts. The income potential from non-interest sources such as increased fees for returned checks, overdrafts, and checking accounts were also studied and evaluated by a committee structure. The dramatic shift from the traditional vertical control structure to the use of several lateral coordination devices was the reflection of increased uncertainty in the environment, a nonroutine technology, the new goal of innovation and change, the infusion of well trained human resources, and a decision to adopt a participative leadership style.

The First National Bank experience illustrates in a general way how the use of vertical and lateral structures depends upon characteristics of the organization. The organization's vertical and lateral structures can be critically evaluated with regard to how well they are adapted to the environment, production technology, goals, human resources, and leadership.

The structure must reflect and fit these characteristics for the organization to be effective. These interrelationships are complex; there is no clear set of rules governing each structural application. For a specific organization, however, the efficiency of the structure for meeting organization needs can be evaluated. In the following chapters of this guide, the concepts of structure and of other organizational characteristics will be developed in more detail. Let's now leave the topic of vertical versus lateral relationships and move on to overall structural designs that organizations may use.

IV. THE TOTAL ORGANIZATION: BASIC DESIGNS

So far we have discussed organizing principles and practices within organizations for control and coordination. Now we shift perspectives and consider the organization as a whole. The basic design of a systems acquisition base is very different from a wing in the Strategic Air Command, which in turn is different from a wing in the Tactical Air Command. These differences illustrate that a uniform design for organization charts does not exist. Organization structure is a tool to do a specific job, and the overall design reflects the goals, production workflow, environment, people, and leadership.

When considering the overall organization, the major choice concerning the vertical hierarchy is about grouping people and tasks together. "Grouping" people and tasks defines how individuals are aggregated into squadrons and where boundaries are placed between squadrons. Groupings are important because they establish a system of common supervision. Employees share common goals, tasks, and values, and the group provides a source of affiliation. Grouping also is important because it encourages cooperation within squadrons or divisions; but it may restrict coordination across them. The choice of grouping will give primary emphasis to those employees grouped into a single squadron under a common supervisor.

The five primary approaches to structure that determine personnel groupings are briefly illustrated in Exhibit 6 as follows:

1. Functional approach to structure. People and departments are grouped together by common skills and functional activities. Engineering personnel are grouped together, as are maintenance personnel and supply personnel. This is sometimes called a "centralized" or "line and staff" structure. This is the most common form of structural grouping in the Air Force.
2. Functional approach to structure with lateral relationships. People and departments are grouped together by common skills, just as in the functional structure. In addition, a lateral overlay of teams, task forces, liaison personnel, and other lateral relations are established to provide strong horizontal coordination across departments.
3. Self-sufficient (program) approach to structure. People and departments are grouped together by program, product, or geographical area. This structure is often called a product organization, program, structure, or decentralized structure. Self-sufficient means that diverse skills needed to complete a single program or project, such as engineering, finance and logistics, are grouped together in a single structural unit and report to a common superior.

Exhibit 6 about here

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4. Hybrid approach to structure. This is a mix of the functional and self-sufficient structures. Several of the organization's departments have a single functional skill, and other departments

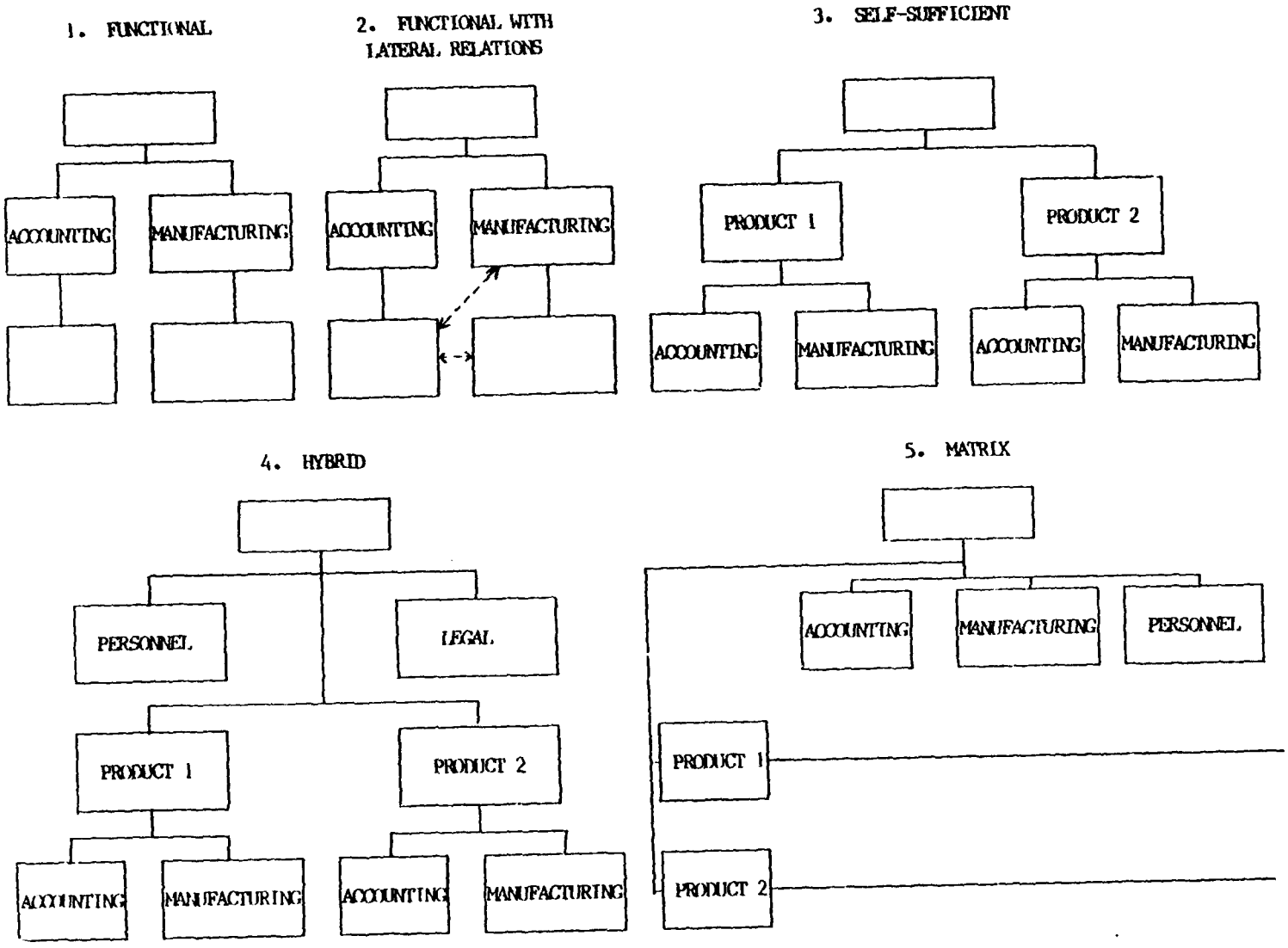


Exhibit 6. Basic Approaches to Organizing.

have diverse skills grouped together for self sufficiency. This approach tries to gain the advantages of both functional and self-sufficient structures.

5. Matrix approach to structure. Functional and self-sufficient structures are implemented simultaneously and overlay one another. Two lines of authority exist in the organization. This is a complex form of departmentation and is used only for unique circumstances.

Each approach to organizing serves a distinct purpose in the Air Force and has advantages for the organization. The overall design should be adopted based upon advantages for the wing's specific needs. Application of each type of structure are discussed below.

The Functional Approach

In a functional structure, employees are grouped together based on similar skills and tasks. All electrical engineers, for example, are grouped together in the same department. Departments that perform "similar" functions are located near each other, so that electrical engineers, mechanical engineers, and production engineers report to a common engineering superior. A hypothetical example of functional departmentation is in Exhibit 7. All marketing people are located within their respective marketing departments, and manufacturing people are located within the manufacturing departments. Within marketing, advertising, market analyses and technical service people are grouped in their respective squadrons. According to the doctrine of specialization, the major functional subunits are staffed by a single discipline. It is considered easier to manage specialists if they are grouped together and if the department supervisor has training and experience in the

discipline. This form of overall design is common in the Air Force and should be used in the following circumstances.

Exhibit 7 about here

RULES OF THUMB: Use the Functional Approach When:

1. The environment of the organization is consistent, stable, and predictable so that the organization will continue to do its task in the same way.

2. Employee technical skills and in-depth specialization are important to the organization.

3. The efficient use of scarce human and physical resources is a major goal of the organization.

4. The production technology within the organization is routine and predictable, and each department works independently of other departments.

5. The top leadership wishes to stress centralized control.

The functional approach to structure is efficient. It achieves economies of scale by grouping specialists together, and provides predictable, efficient use of human resources and centralized control. The functional structure has significant advantages, but it also has disadvantages.

With a Functional Approach, You Will Gain:

1. Efficient use of scarce resources.

Similar activities are grouped together so that available skills and resources are consolidated into a single pool. Tasks can be assigned to this pool to meet organizational demands with great efficiency. Employees can be

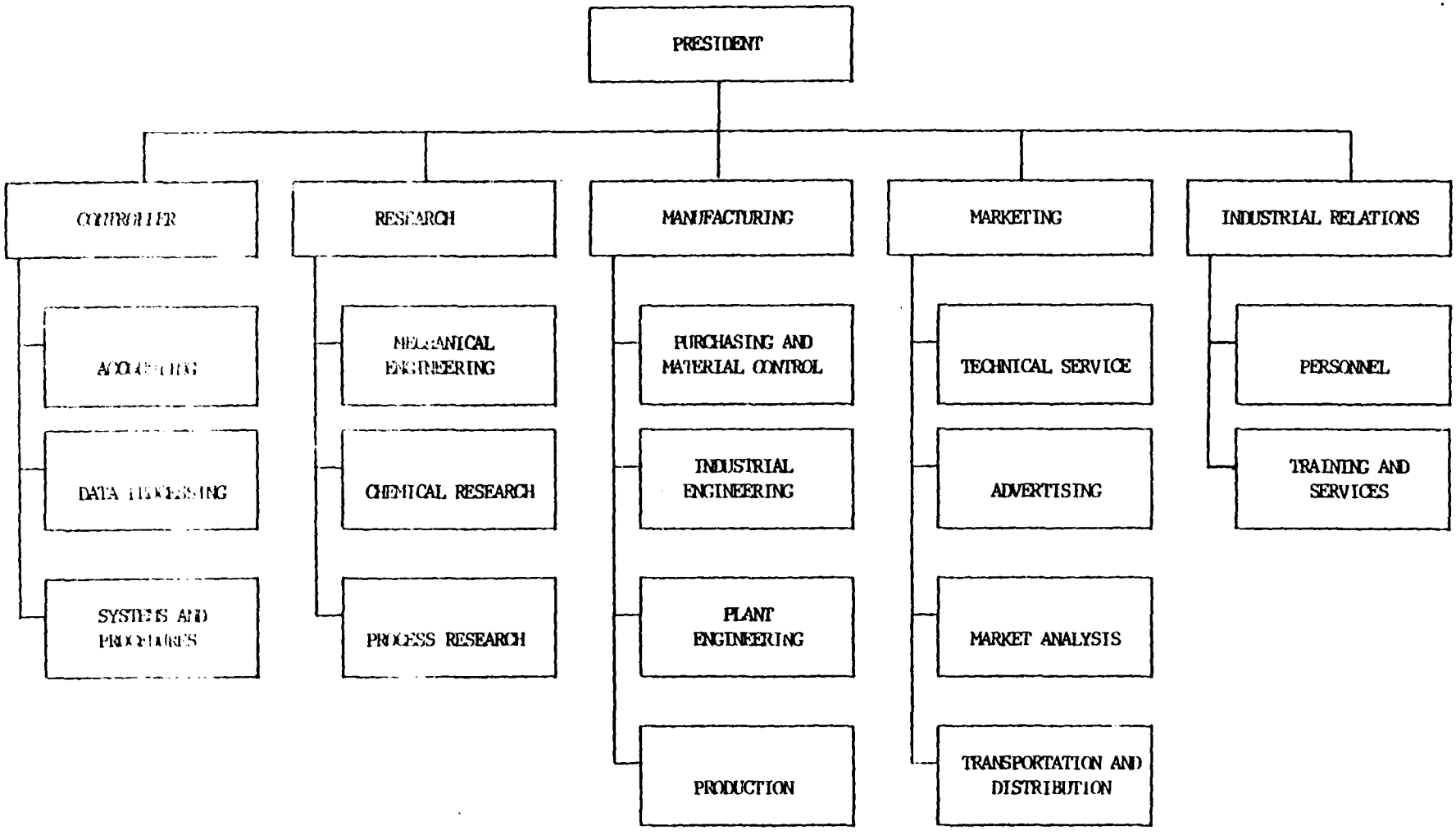


Exhibit 7. Example of a Functional Structure.

assigned to any task in their specialty. No duplication of personnel or facilities is required.

2. Skill development for technical personnel.

Specialists are all grouped together. They exchange ideas with one another and work on a variety of tasks. Training opportunities are available to deepen their experience within the specialty. Employee rewards and promotions are based on technical skills, which motivates employees to improve their skills.

3. Centralized decision making and control.

The point at which lines of authority converge is at the top of the organization. Major decisions and issues are resolved by the commander. The functional structure funnels major decisions to commanders, who provide unity of direction for the organization.

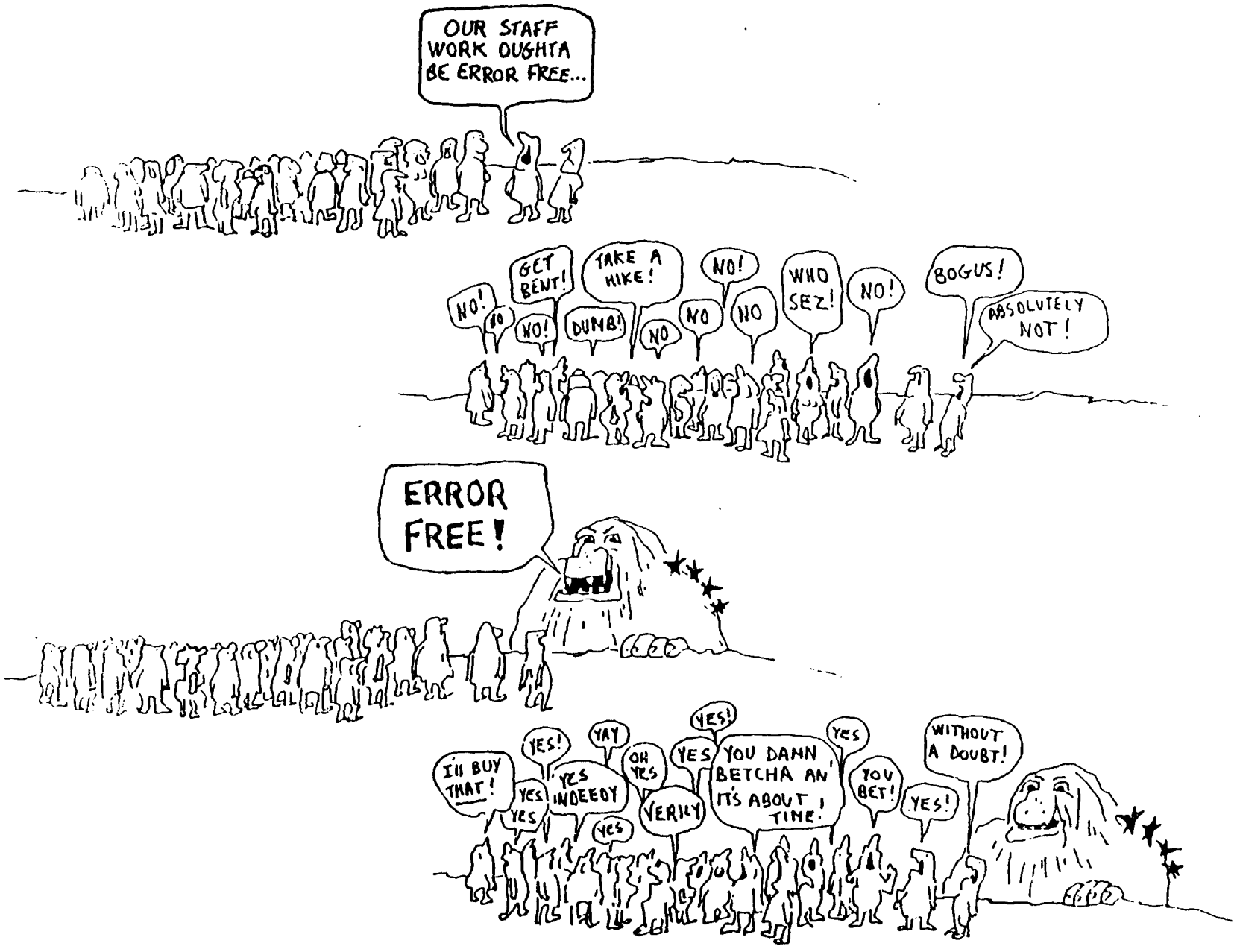
4. Excellent coordination within each functional department.

Employees communicate informally within departments to accomplish their respective tasks. Employees share physical facilities, have similar training and experience, similar goals, and exchange information and coordinate with one another easily.

5. Employees are focused on functional department goals.

Employees identify with their function, such as field maintenance, and attempt to accomplish department goals. Department goals, however, do not reflect the goals of other functions or of the total organization.

The advantages of functional departmentation reflect the vertical control described earlier. Even with these advantages, functional departmentation is far from perfect. For example, before General Creech took over TAC, the


OUR STAFF WORK OUGHTA BE ERROR FREE...
NO!
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YES!
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YOU DAMN BETCHA AN' IT'S ABOUT TIME!
YES
YOU BET!
YES!
WITHOUT A DOUBT!

functional structure was used for aircraft maintenance. He had to change structure to overcome certain problems.

With a Functional Structure, Watch Out for:

1. Coordination across functional departments may be poor.

In a functional structure, employees typically identify with their own department and may be reluctant to compromise with other departments to achieve organizational goals. Employees may disagree about which department is responsible for a task, and may be unwilling to compromise their department's goals so that other departments can achieve goals.

2. Slow response time for major changes.

Organization-wide changes are difficult to implement because employees are focused on their own goals and activities, and are reluctant to compromise Large scale changes require coordination across departments. The functional organization structure tends to be locked into a "stovepipe" mode of behavior. The only changes that can be easily implemented are from the top down.

3. Decisions may pile on top of the hierarchy.

Disputes are resolved by passing them up the hierarchy so senior managers may become overloaded with decisions. The top manager is the only source of authority over all departments, so issues that affect multiple departments are funneled there. Planning and scheduling systems may help, but often top managers find themselves overloaded.

4. Employees have a limited view of organizational goals.

Employees do not have a corporate viewpoint. They identify with their department, and decisions within one functional department often are at cross purposes with other departments or the overall organization. When the

organization is involved in multiple projects, conflicts arise over the relative priority of each project in competition for employee time and resources. Department personnel may place greater emphasis on their own specialty rather than on overall goals, such as fixing the airplane.

The Functional Approach with Lateral Relationships

The organizational chart for this structure is the same as for the functional structure, with employees grouped together based on common skills and tasks. The difference is that this approach makes a conscious attempt to increase coordination across departments through the use of lateral relationships. A lateral relationship may exist temporarily to solve a specific problem, or be permanent to provide ongoing daily or weekly meetings to achieve coordination. Examples of lateral relationships include the integer teams used in AFLC, and weekly meetings of operations and maintenance personnel to resolve equipment modifications in SAC. These lateral relationships can be formalized and made part of the daily work activities of employees.

Lateral relationships are a way to overcome difficulties in the functional structure. They help break down barriers across departments and enhance organizational flexibility and change. One example is in Exhibit 8, where the Xs indicate an individual's participation in a standing committee to review test equipment modifications. People from each functional department meet weekly and deal face-to-face. They become loyal to their joint tasks as well as to their respective departments. The standing committee facilitates horizontal communication and decreases the number of issues to be passed up the hierarchy. Participants also learn to compromise the department's objectives for the objectives of the joint project. An example of

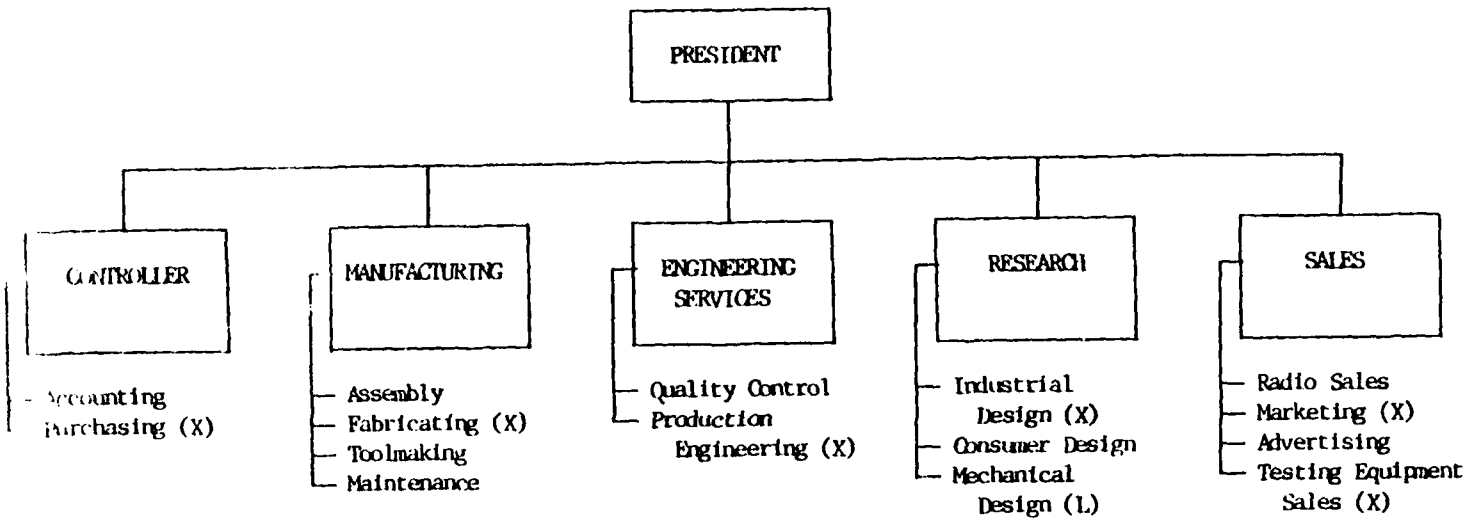
individual-based coordination is also illustrated in Exhibit 8, where the liaison person from research is responsible to coordinate activities with engineering and manufacturing.

Exhibit 8 about here

An even stronger form of lateral relationship is the use of a team combined with a full time project manager. Some members of the team may be assigned on a full time basis to accomplish a desired outcome. The project manager may have his own office outside the departments being coordinated yet have the responsibility of coordinating people from several departments. An example of the use of team and project management is in Exhibit 9. Members of the team report to the project manager on a dotted line basis, which means the project manager has responsibility for the project. The project manager does not have formal authority over team members but is responsible for insuring that the project is completed on time and project goals are achieved. Formal authority for giving pay raises, or hiring and firing, rests with the functional department managers. However, the project manager still can have great impact if team members understand their responsibility to the project, and if coordination across departments and project goals become important to team members. The integer teams used at AFSC bases are an example of team based coordination within a functional structure. Successful project managers' use of special skills are described on pages 16-18 of this report.

Exhibit 9 about here

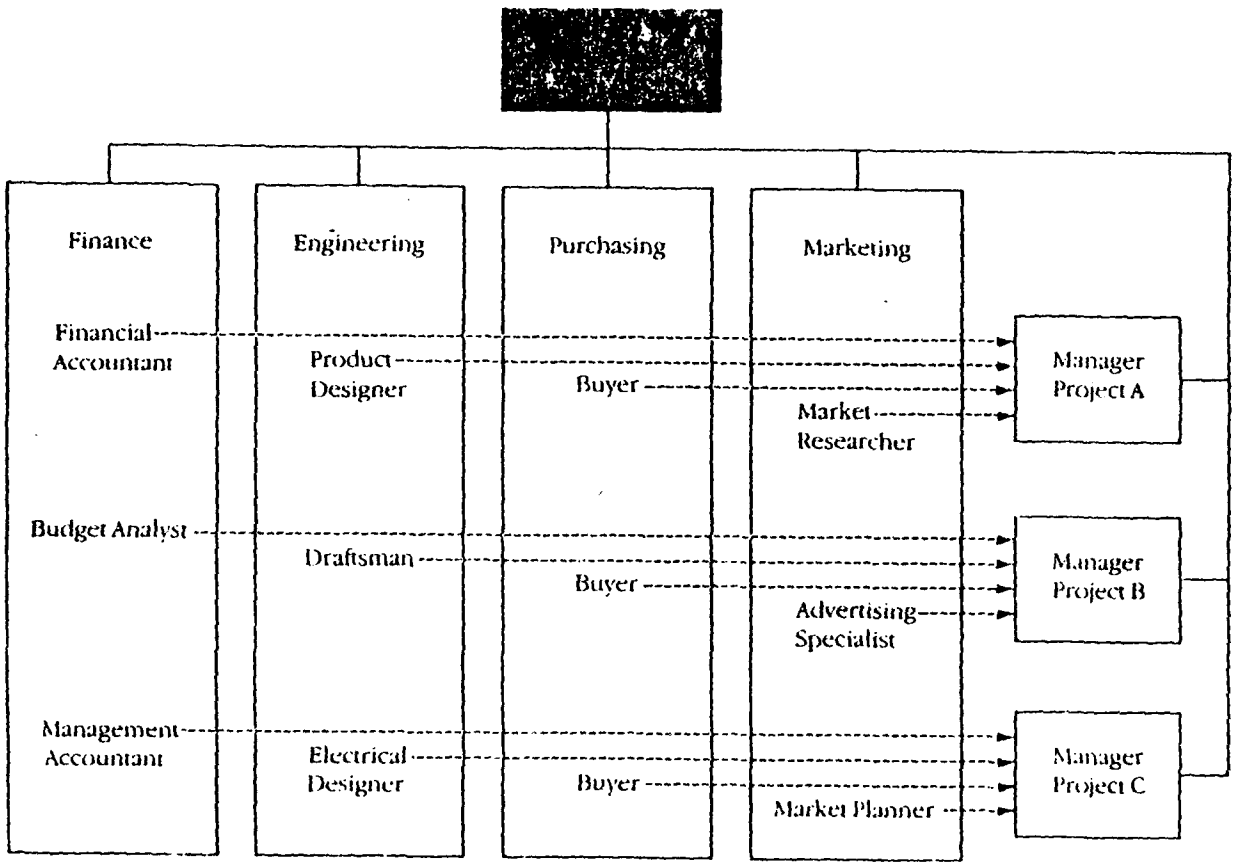
Exhibit 8. Example of Task Force and Liaison Position in Functional Organization.



X = Test Equipment Product Task Force

L = Liaison Person to Manufacturing and Engineering Services

Exhibit 9. Example of Project Teams in a Functional Organization.



RULES OF THUMB: When to Use Functional Approach with Lateral Relationships:

1. A single task or project arises that requires the participation of several departments. The lateral relationship will be temporary and disbanded when the task is completed.

2. There is a recurring need for communication between two or more departments in order to accomplish the organization's mission. A liaison person, committee, team, or task force may be created to achieve this communication. For example:

> One wing commander stressed a very informal approach, including face-to-face meetings. The commander stressed cooperation rather than control, and encouraged frequent meetings at lower levels without commanders present. When a special project arose, they "threw away" the organization charts and created a team to do the project.

3. When organizational characteristics--production technology, environment, human resources, leadership, goals--call for a functional structure, yet the organization responds too slowly to changes, decisions pile on top of the hierarchy, and interdepartmental coordination is poor. Lateral relationships work within the functional structure to decentralize decisions, adapt to changes, and improve cooperation. For example:

> The crew chiefs, AMS, and FMS personnel have distinct responsibilities for aircraft maintenance. They have specialized training and are concerned only with their own job areas. Yet CMS, FMS and AMS people argue about whose responsibility it is to do a job. Too much parochialism occurs within shops. One deputy commander for maintenance created quality circles to establish better informal relationships so people would get along to solve problems. At another wing, a commander said, "The reason we have such an excellent take off rate is that coordination works so well. We have informal communications among maintenance functions (FMS, CMS, AMS, etc.) to an extent between DO and MX personnel at levels down to and including the branch level.

With a Functional Structure and Lateral Relationships, You Will Gain:

1. Improved horizontal communication across squadrons or divisions.

The lateral coordination mechanism, whether it be a task force, liaison officer, or committee meeting, provides workers an opportunity to exchange information with other squadrons. The improved communication helps them understand one another's perspectives so their work complements other squadrons.

2. Faster responses from lower levels.

When change is required, such as modifying equipment, implementing a new technology, or responding to changes in funding or mission, lateral coordination provides an avenue of communication and response. Without lateral coordination devices in place, departments are slow to respond, and they respond according to their own needs rather than the needs of the overall organization.

3. Improved coordination, reduced conflict.

Teams, task forces, committees, liaison officers and quality circles foster an attitude of cooperation. Participating in joint problems overcomes the differences in goals that often leads to conflict. While conflict will not be reduced to zero, lateral structures provide a means to confront differences and resolve them in a healthy fashion.

With the Functional Structure and Lateral Relationships, Watch Out For:

1. Reduced information at top levels.

The addition of lateral structures often leaves upper managers feeling left out of things. They are no longer directly involved in all decisions and may experience a feeling of lost power and status. The implementation of lateral relationships needs to be done so that senior managers understand that

decentralization will occur. People will solve problems in a horizontal fashion rather passing everything to the top of the hierarchy.

2. Coordination responsibilities are placed on functional specialists.

Functional specialists will be expected to spend time in meetings. Functional specialists and their supervisors sometimes resent the reduced time for task accomplishment. Functional specialists may also need training in conflict reduction skills to function effectively in coordination roles, and to learn how to confront and resolve conflict. When organization members handle problems horizontally, some time and energy is diverted from their functional tasks.

The Self-Sufficient Approach

The self-sufficient approach to organizing places employees in departments by desired organizational outcome (product, project, program) rather than by common skills. Exhibit 10 illustrates the difference between functional and self-sufficient forms of organizing. In the self-sufficient structure the wing is subdivided into three flights. Each flight is self-sufficient because it contains all necessary tasks to maintain and fly its airplanes. This may be called a decentralized structure because top level decision making is pushed down one level in the hierarchy. The hierarchy converges at the level of each flight rather than at the wing commander. The self-sufficient structure may be used when a wing deals with different types of aircraft. One flight might be devoted to helicopters and another flight to fixed wing aircraft. The self-sufficient units make sense because different operational and maintenance skills are required for each type of aircraft. Each flight has a distinct mission and needs to be autonomous. The self-sufficient structure provides excellent coordination within each flight and

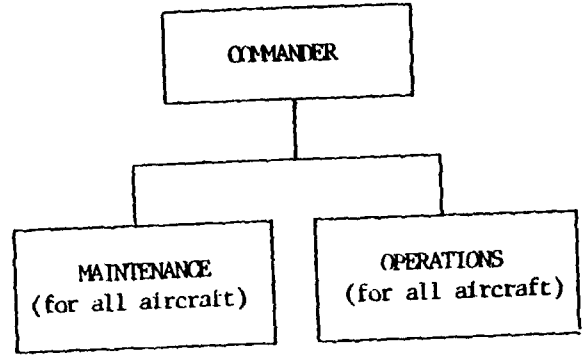
little coordination is required across the self-sufficient units. The POMO (Product-Oriented Maintenance Organization) or COMO (Combat-Oriented Maintenance Organization) structures initiated in TAC under General Creech was an attempt to create self-sufficient maintenance units that would be responsible for specific aircraft.

Exhibit 10 about here

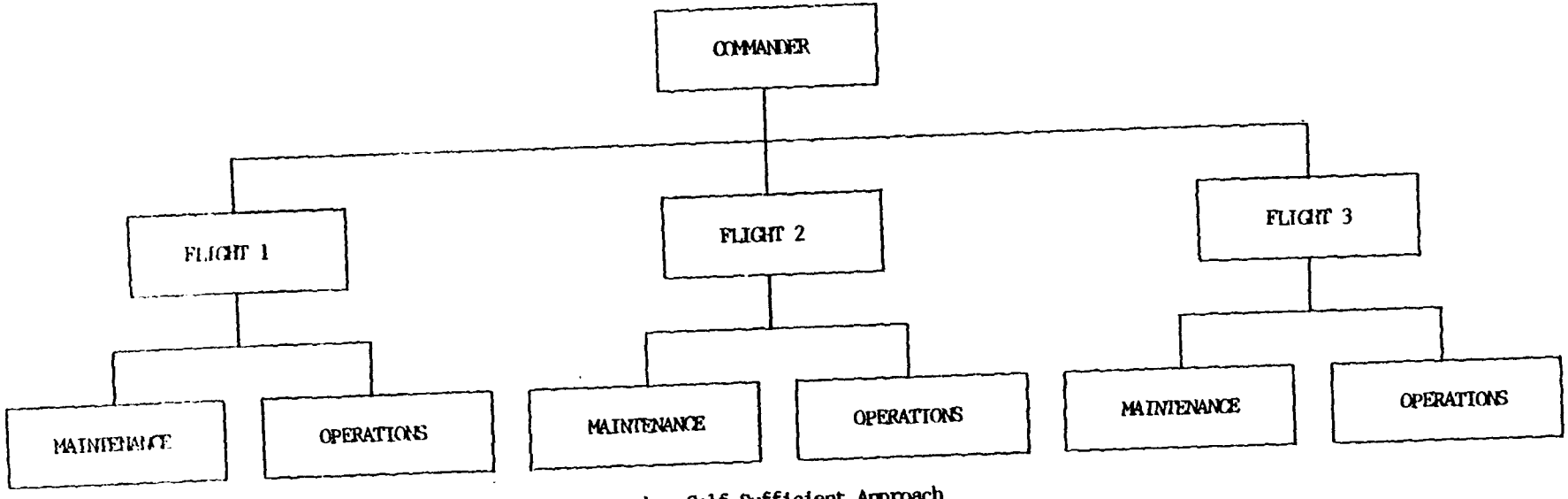
Another example of self-sufficient structure is in Exhibit 11. This structure is typical of an aerospace corporation. Each weapon system program is made self-sufficient by having the engineers, manufacturing personnel, controllers, and contracting personnel needed for system development. The self-sufficient structure is sometimes called the "small company" approach because one large functional organization is divided into several small, independent organizations.

Exhibit 11 about here

At many Air Force bases, the self-sufficient approach to structure is used "partially." For example, a small proportion of aircraft in a wing may need to be on alert. These aircraft are given resources to be self-sufficient although the rest of the wing remains in a functional structure. As described above, AFR 66-5 (POMO-COMO) represents an effort to create self-sufficient units compared to AFR 66-1 which keeps maintenance in a functional structure. The differences between 66-5 and 66-1 structures are discussed in detail in Chapter IV of this guide. At European bases the medical people are assigned to flights rather than to the clinic. The medical people are owned by the



a. Functional Approach



b. Self-Sufficient Approach

Exhibit 10. Functional and Self-Sufficient Approaches to Design of Wing.

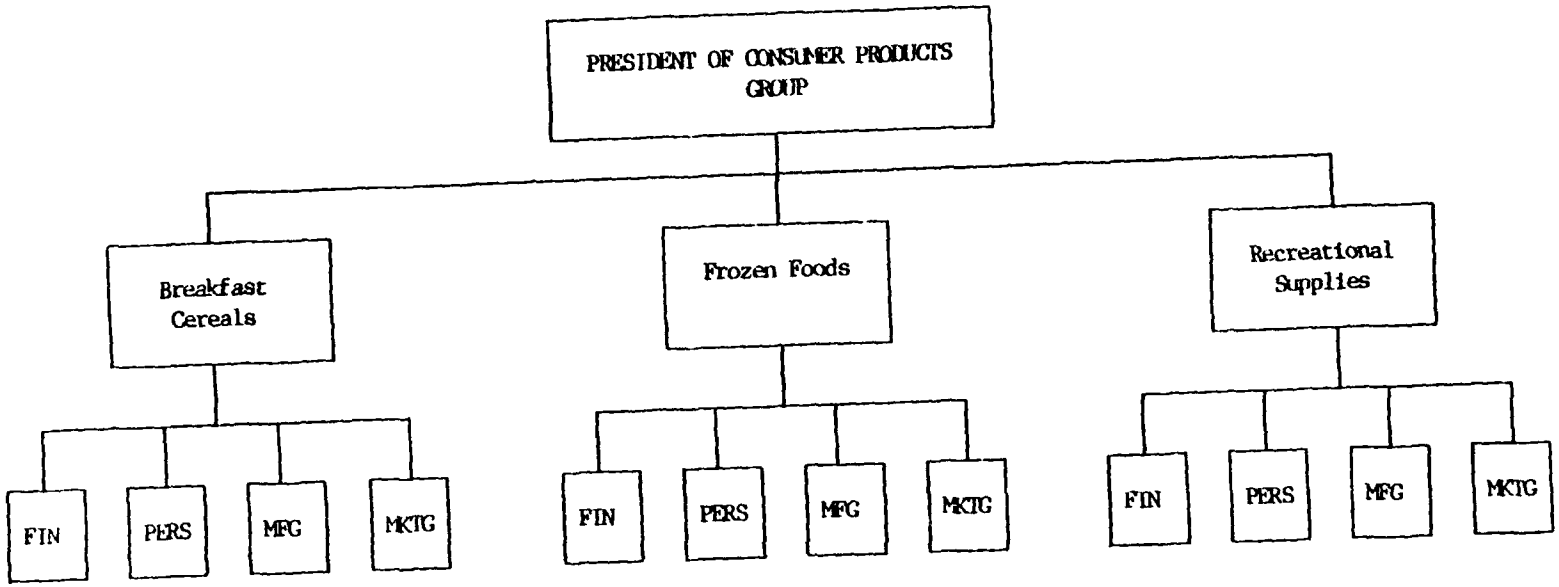


Exhibit 11. Self-Sufficient Structure in a Retail Products Firm.

flights because they serve as a resource to each flight. Likewise, trucks are assigned and belong to MA rather than to the motor pool because MA needs to be self-sufficient. These variations in the self-sufficient approach are designed to achieve the same outcome: provide the resources to smaller units so they can accomplish their project or program. For any wing in the Air Force, the difference between functional and self-sufficient departmentation is dramatic. The structures lead to sharply different patterns of behavior.

RULES OF THUMB: When to Use Self-Sufficient Structure:

1. The organization is large and has sufficient personnel and physical facilities to assign to separate, self sufficient units.

2. The environment is unpredictable, so each unit must respond to unexpected demands and changes.

3. Goals of flexibility, mobility, and immediate response are more important than efficiently using internal resources.

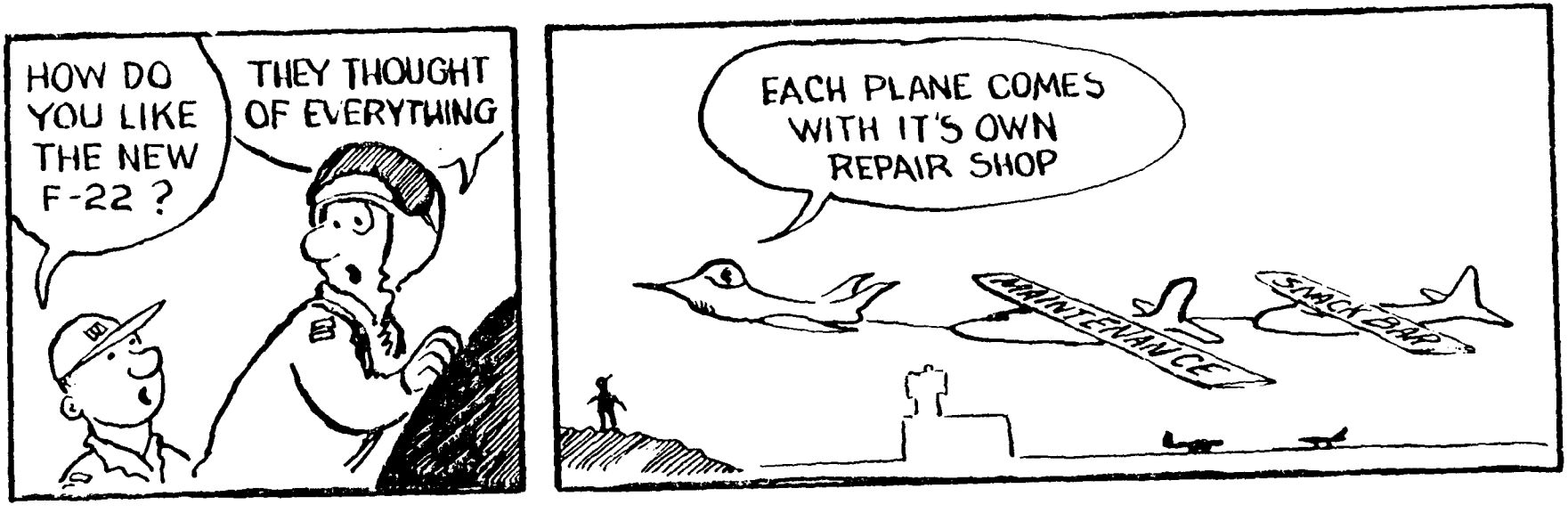
4. The production technology within each self-sufficient unit requires close coordination across units.

5. Top leadership wishes to decentralize responsibility for unit performance to a lower level in the hierarchy.

With a Self Sufficient Structure, You Will Gain:

1. Rapid change.

Each self-sufficient unit is rather small, and employees have easy access to one another. Each unit is mobile and flexible because it is small in size, has efficient coordination, and can act independently of other self-sufficient units.



The Ultimate Self-Sufficient Structure

2. Excellent coordination across functional skills.

Conflict and disagreement between personnel with different functional skills is minimized. Employees tend to identify with the entire unit rather than with their own specialty. Each unit acts like a small company to accomplish unit outcomes.

3. Organizational goals take precedence.

Employees see organization goals as their primary purpose rather than narrow functional goals. Employees within each self-sufficient unit adapt to the requirements of the specific project, aircraft, or product.

4. Better control over diverse products or services.

Each division is a self-sufficient unit, and top managers can pinpoint success or failure for each division. Each division is responsible for resource inputs as well as product or service outputs and can be evaluated in comparison to other divisions.

With the Self Sufficient Structure, Watch Out For:

1. Duplication of resources.

Each self-sufficient unit requires its own personnel, facilities, and other resources. Instead of fifteen avionics specialists sharing a common workbench and physical facility, five each may be assigned to three flights. Additional personnel and facilities often are needed to do the same job. At one European base, CRS people had to be pulled out of AMU's because there weren't enough qualified people to go around. This temporary reversion to a functional structure used resources more efficiently.

2. Some technical depth is lost.

The size of each functional group is smaller, and employees are less concerned with technical specialization than with the general skills needed to

achieve the unit's outcome. Specialists are likely to become generalists. Training opportunities are fewer, and employees do not have a large technical group to work with.

3. Weak coordination across self-sufficient units.

Each division may operate on its own without regard for the activities of other divisions. Workers may perceive themselves in competition with other divisions, attempting to win attention and resources from other divisions. In the corporate world, companies such as Hewlett Packard and Digital Equipment have had major coordination problems across self-sufficient divisions. Small, entrepreneurial divisions developed computer hardware and software independently. A customer could buy a computer from one division and software from another division that were not compatible because the divisions didn't coordinate. Sometimes conflicts occur between divisions, such as between a bomber and missile wing at the same base. The solution to these problems is to implement forms of lateral coordination, such as teams and task forces, to keep divisions in alignment.

The Hybrid Approach

Many Air Force units are not organized into either a functional or self-sufficient structure, but contain a mix of the two, which is called a hybrid structure. The hybrid structure contains elements of both functional and self-sufficient groupings, as illustrated in Exhibit 12. Skills such as finance and marketing are grouped into self-sufficient units, while the skills of human resources and legal are grouped by similar function. Both functional and self-sufficient units report to the president.

An important difference here is that the self-sufficient units are not 100 percent self-sufficient. They contain those skills that require a high

level of coordination and frequent change. Those functions that do not have to be closely coordinated within each program or project can be centralized into a functional department that provides services to all projects as needed.

Exhibit 12 about here

As a practical matter, most large business and government organizations end up in some form of hybrid organization. Large companies like IBM, General Motors, Intel and Westinghouse use hybrid structures. Each self-sufficient division is mission-oriented, and the functional departments provide support services. Because each division does not have to maintain all of its own support groups, it can concentrate on a specific mission.

The hybrid structure can be used in many situations, and it has advantages and disadvantages. The hybrid structure is similar to self-sufficient units, except for the modification of having some departments based on functional skills. The value of the hybrid organization compared to the completely self-sufficient structure is as follows.

RULES OF THUMB: When To Use Hybrid Structure:

1. The organization should be moderate to large size. The organization must be large enough that sufficient resources are available for deployment to self-sufficient divisions, yet small enough to need efficiencies in some functional areas.

2. Part of the organization has the mission of flexible, adaptable response to changing environmental demands, and part of the organization needs to manage the efficient use of scarce resources.

3. The production technology involves two types of task requirements.

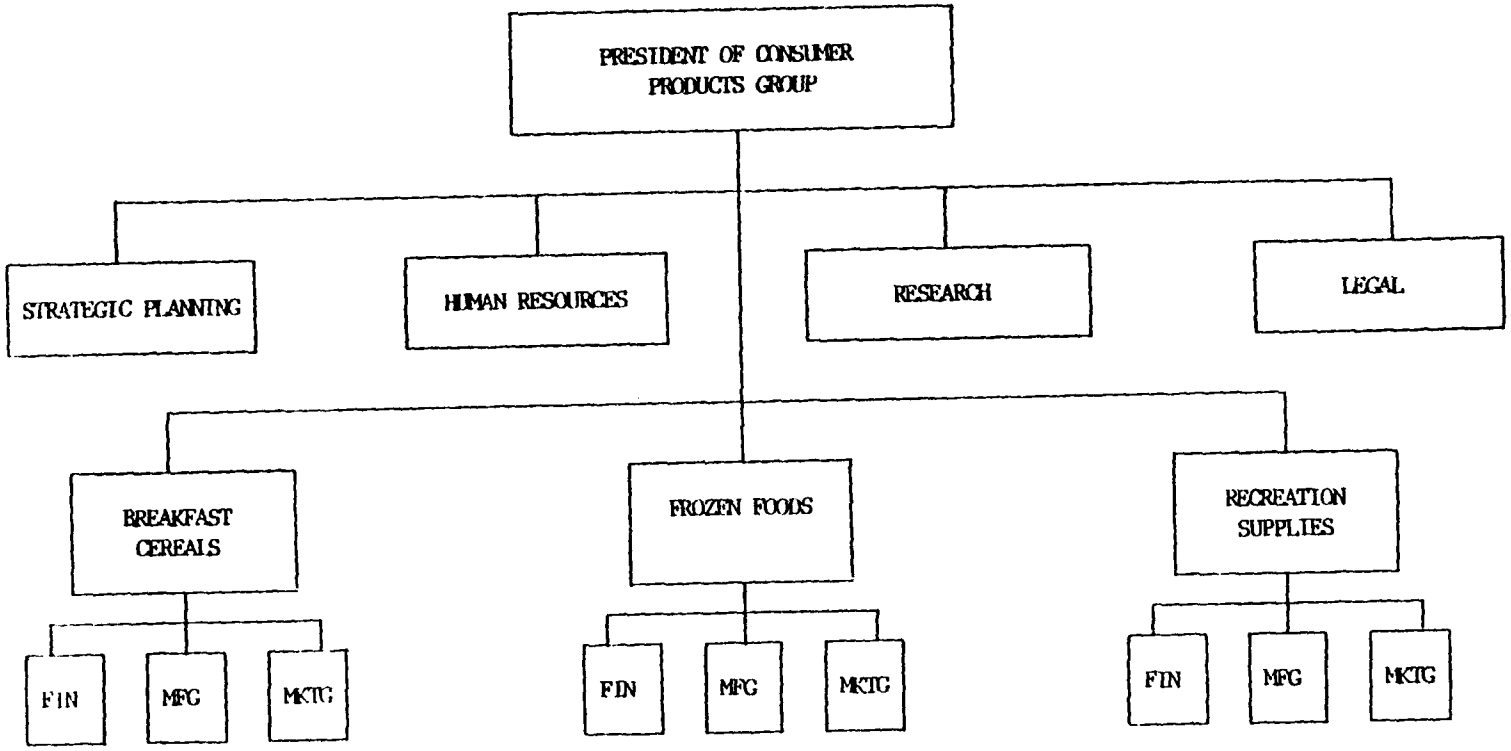


Exhibit 12. Example of a Hybrid Structure in Retail Products Firm.

One set of tasks are nonroutine and require extensive coordination within self-sufficient units. Other tasks are routine and independent, and can be grouped on the basis of functional skills.

With the Hybrid Design, You Will Gain:

1. A compromise between the goals of adaptability and efficiency.

The organization attains efficient use of scarce resources in support functions by grouping together all people with the same skill. This frequently is necessary in research laboratories because people and facilities are too expensive to duplicate for each project. The single function can provide a service to all divisions. Functions that are grouped into self-sufficient program units are able to coordinate quickly and effectively and achieve innovation and adaptability.

2. Better alignment between wing goals and project goals.

Each self-sufficient division is able to pursue its own goals, but divisions are not so autonomous that overall organizational goals are ignored. Divisions are not completely self-sufficient. Functional departments provide services to each division and help keep divisions coordinated, thereby keeping divisional activities in alignment with the goals of the organization as a whole.

With the Hybrid Design, Watch Out For:

1. Excessive administrative overhead.

Hybrid structures often lead to the build up of large functional staffs that oversee self sufficient divisions. Headquarter's staff may be used to control divisions. If so, the headquarter's staff may grow large through well-intentioned efforts to control divisions, but the organization then takes

on characteristics of a functional structure. Decisions are centralized and delayed because people at headquarters have to approve everything within divisions. Quick response and adaptation within the self-sufficient divisions can be lost.

2. Conflict between functional and self-sufficient departments.

Centralized functions typically do not have line authority over divisional activities, yet they attempt to coordinate and influence divisions. Division managers may resent headquarter's intrusions, and headquarter's managers may resent the efforts of the divisions to go their own way. Functional managers may not understand the unique circumstances of each division, and they may treat divisions alike even if divisions are trying to perform different tasks. Divisions may create their own mini-departments (e.g., staffing, finance) to provide the support service typically provided from headquarters. With this duplication of resources, the efficiencies associated with the hybrid structure are lost.

The Matrix Approach

The matrix structure is considered unique because it incorporates both functional and self-sufficient lines of authority. The hybrid structure described above organizes some departments into functional units and other departments into self-sufficient units. The matrix form of organizing, by contrast, utilizes both structures simultaneously in the same part of the organization as illustrated in Exhibit 13. In Exhibit 13, the functional hierarchy of authority runs vertically and the self-sufficient hierarchy of authority runs horizontally. The horizontal structure is similar to the team based coordinating mechanisms described earlier. The matrix is a stronger

form of lateral coordination because the horizontal lines are permanent and represent formal authority equal to the vertical hierarchy.

Exhibit 13 about here

One outcome of the matrix structure is that many employees experience a dual line of authority: they report to one boss who is in charge of the function and to another boss who is in charge of the program as illustrated in Exhibit 14. The senior engineer reports to both the Medical Products manager and to the engineering vice president. This violates the concept of unity of command. This is normally resolved by separating responsibilities for the two lines of authority. The functional boss typically is responsible for technical and personnel issues, such as quality standards, current training, and assigning technical personnel to projects. The product manager is responsible for program-wide issues, such as overall design decisions, meeting scheduled deadlines, and coordinating technical specialists from several functions. The outcome of the dual hierarchy is an organization doing two things simultaneously in each major department to:

(1) achieve efficient use of personnel and physical resources through the functional hierarchy; and

(2) achieve adaptability, coordination, and program goals through the program hierarchy.

Exhibit 14 about here

A hypothetical use of the matrix structure in a business organization is illustrated in Exhibit 15. Each program office is designed as a self-

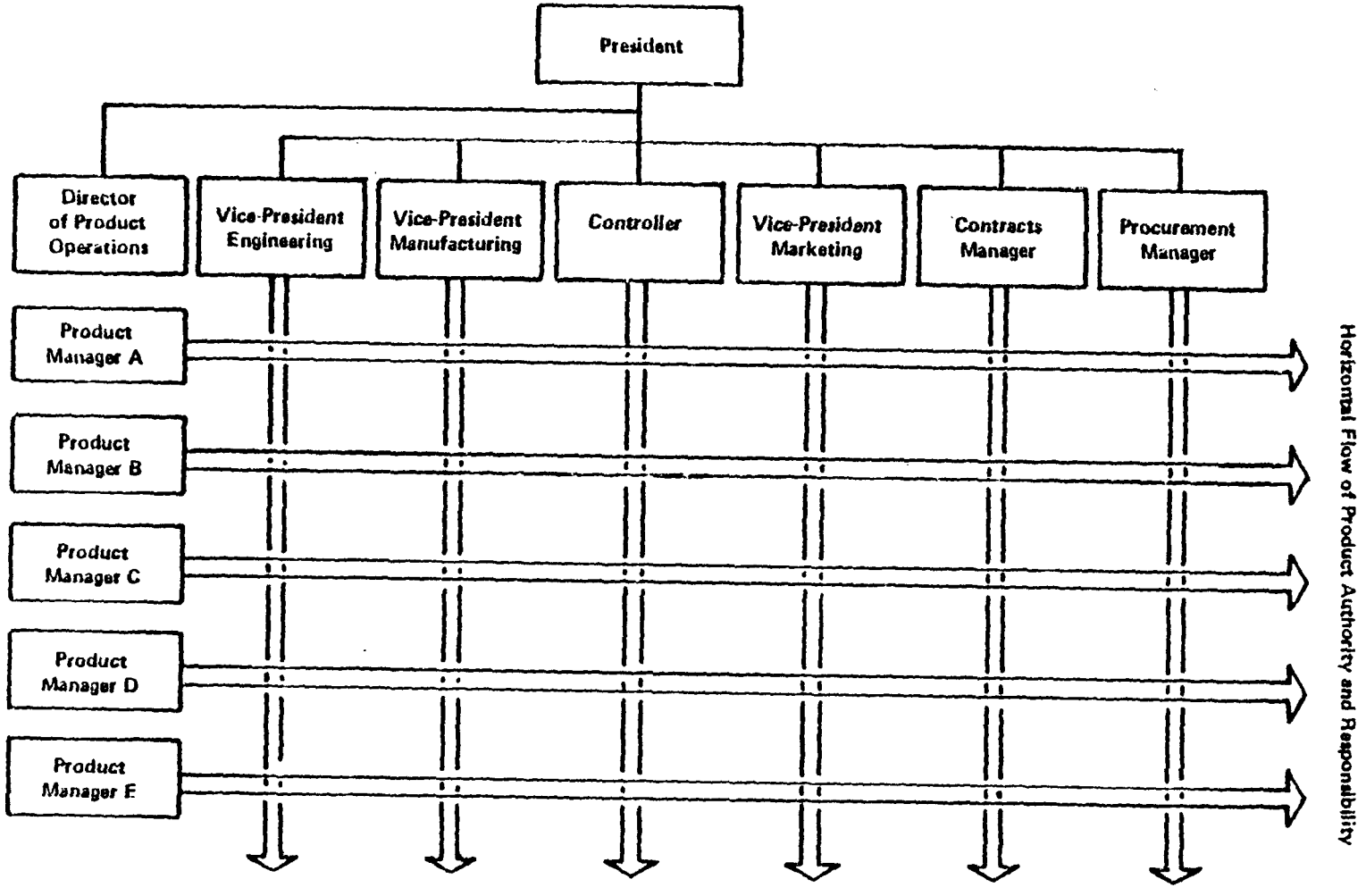


Exhibit 13. Dual Authority Structure in a Matrix Organization.

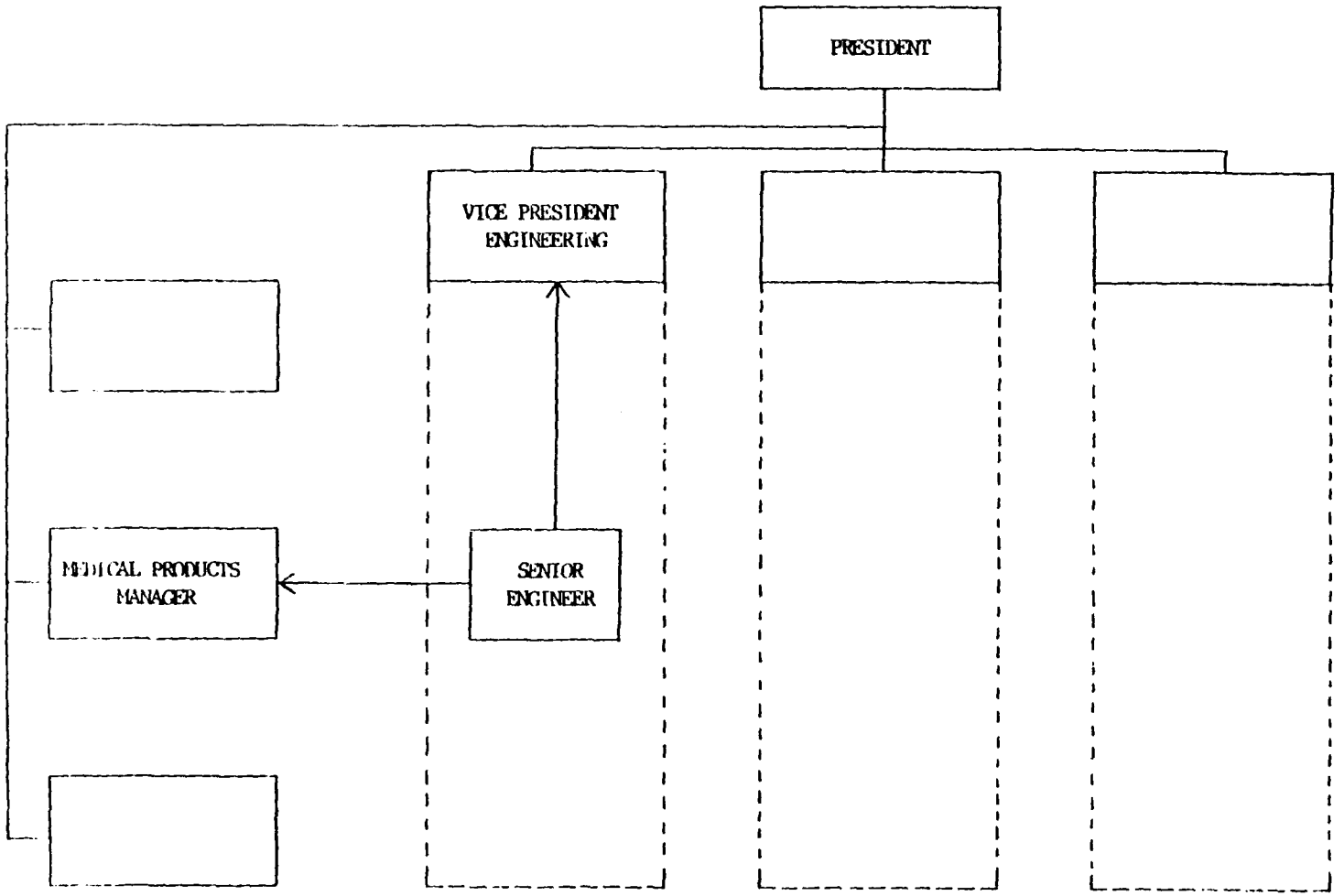


Exhibit 14. Close Up of Two-Boss Relationship in Matrix Structure.

sufficient unit, and program offices have horizontal authority. The program office is responsible for coordinating all necessary resources to complete program objectives. However, supervisors within each department also report vertically to a functional director. The functional director is responsible for personnel training, performance appraisal, technical standards, and technical quality. The functional director is also expected to balance scarce human resources across several programs. As programs grow and decline during stages of development the functional director can reassign personnel to other programs to ensure the most efficient use of human resources.

Exhibit 15 about here

Key positions. For the matrix to work as intended, key managers must understand the matrix and acquire the skills associated with a dual authority structure. The key managers who can make the matrix structure work are the top leadership, matrix bosses, and two-boss managers, which are illustrated in Exhibit 15.

The top leadership is at the head of both command structures. This person must maintain a power balance between the functional and program hierarchy. If one side dominates, some benefits of the matrix will be lost. The top leadership must be willing to delegate decisions and encourage direct communications and joint problem solving by managers beneath them.

The matrix boss is responsible for one side of the dual hierarchy. In Exhibit 15, the engineering vice president is a matrix boss and the director of Program A is a matrix boss. The problem for matrix bosses is that they do not have complete control over their subordinates. Hence they must work with one another to delineate activities over which they are responsible. The

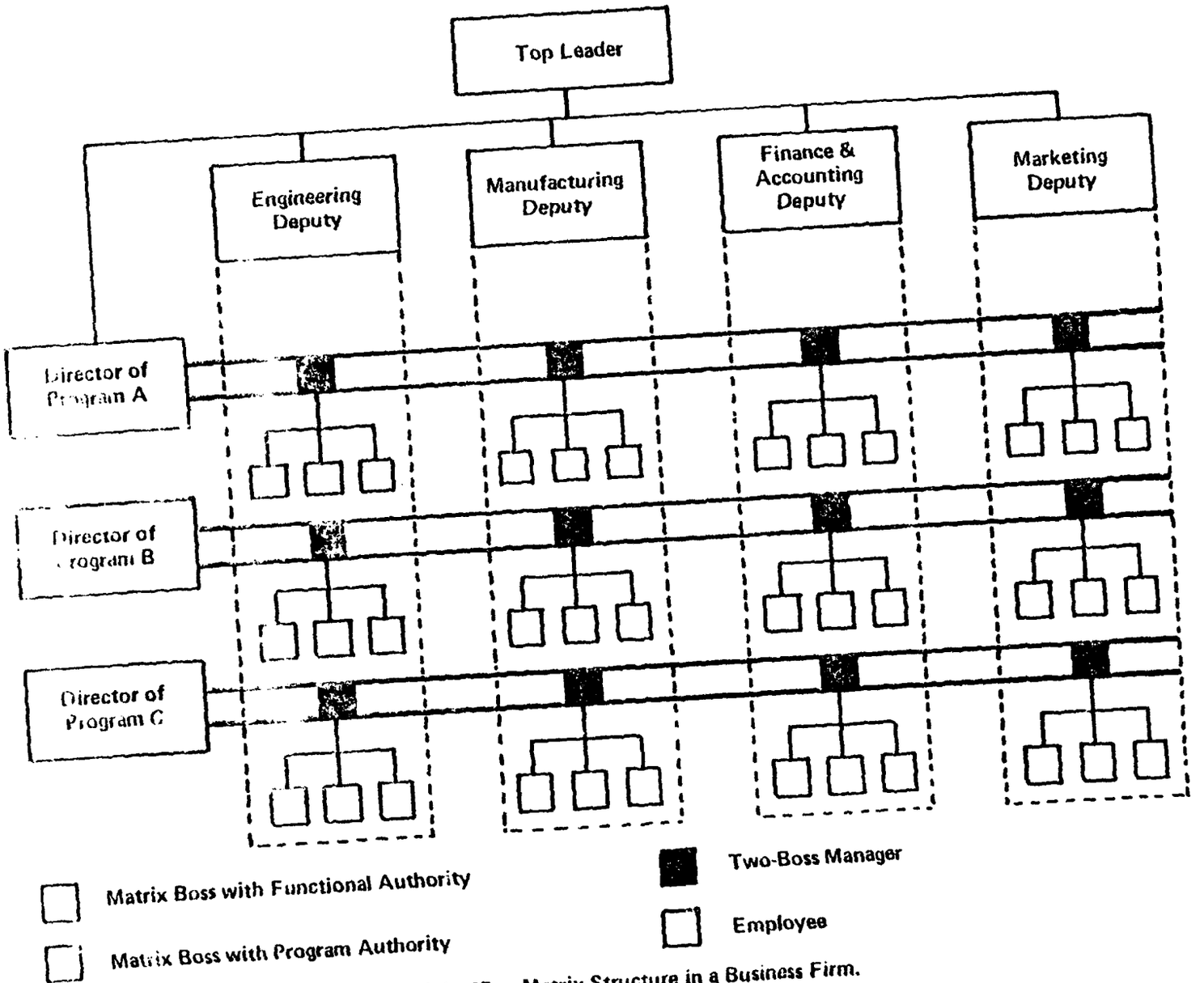


Exhibit 15. Matrix Structure in a Business Firm.

functional boss is responsible for employee expertise, rules, and standards. The program boss is responsible for coordinating all of the specialties that go into a successful program. Matrix bosses must have the skills to confront one another on disagreements and conflicts. They also must collaborate on performance reviews, promotion, and salary increases since subordinates report to both of them. These activities require time, communication, patience, and skill at working with people.

The two-boss manager is the person who has two bosses. This person often experiences anxiety and stress from the conflicting demands imposed by the matrix bosses. The two-boss manager must be able to confront his superiors on these conflicts, and reach joint decisions with them. Two-boss managers should display dual loyalties to both their functions and their product.

RULES OF THUMB: When to Use the Matrix Structure:

1. Environmental demands are shifting and very uncertain. The value of the matrix is its ability to process information to deal with unrelenting uncertainty. The matrix bosses and two-boss managers are in frequent meetings. The matrix enables the organization to cope with an unstable environment that imposes changing priorities, changing programs, and new programs.

2. The production technology is sophisticated, nonroutine, and interdependent. This type of production technology occurs frequently in research organizations and in the development of new weapon systems. Nonroutine production activities require extensive analysis and coordination because of their scope and complexity.

3. The organization is medium sized and has multiple programs operating simultaneously. Huge organizations cannot be managed in a matrix. On the

other hand, unless the organization is large enough to have multiple programs, projects, or products, the matrix is not needed. A medium-sized organization that has to coordinate scarce resources across several major programs is appropriate for the matrix.

4. The organizational mission is to achieve both innovation and efficient use of resources at the same time. The product/program chain of command provides the flexibility/adaptability required for innovation and change. The functional chain of command encourages the efficient use of scarce resources. When the mission requires that both goals be met equally and simultaneously, then matrix structure is appropriate.

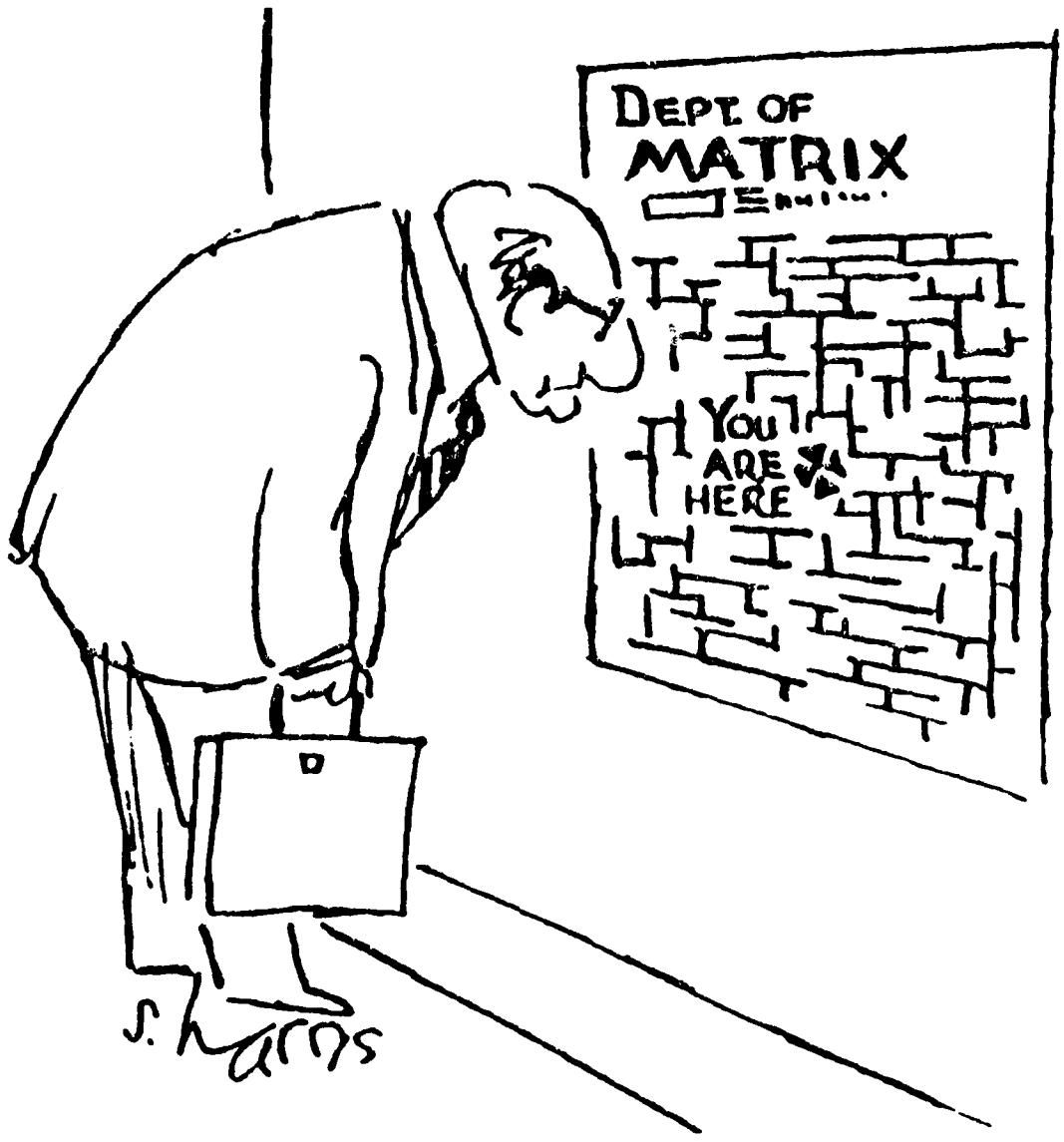
5. Personnel have high skill and experience levels. The matrix requires constant negotiation, discussion, and conflict reduction. Employees who are mature, experienced, and know their business are needed to perform these activities. Employees who are young, have lower skills and less organizational experience have a difficult time coping with the matrix. They have not yet developed the social skills required for continuous lateral relationships.

<u>With the Matrix Design, You Will Gain:</u>

1. <u>More efficient use of human resources than the self-sufficient structure</u>.

In the self-sufficient structure poeple are assigned full time to one program. In the matrix structure the functional director is responsible for functional specialists. Personnel can be reassigned from one program to another as needed or a person can be assigned half time to two programs if program priorities warrant.

2. <u>A "home" for functional specialists</u>.



(Sidney Harris)

Functional specialists are part of a larger pool, and thereby the organization attains some advantages of the functional structure. The functional director is responsible for training, in-depth skill development, and career progress. A career ladder is available through the functional hierarchy.

3. Lateral communication and coordination.

Frequent meetings and discussions are held to coordinate across both programs and functions. The conflicts that occur among matrix managers and two-boss managers encourage frequent discussions and conflict resolution meetings. Frequent communication and coordination enables the organization to cope with frequent changes while using scarce resources efficiently.

When Using the Matrix Structure, Watch Out For:

1. The dual authority structure can be frustrating and confusing.

Lowe level employees may never be sure whether their commitment is to the program or to the function. They may have difficulty coping with competing demands from the dual hierarchy. Matrix bosses are often frustrated because they lack complete authority over subordinates.

2. High conflict and lost time.

The matrix engenders conflict by pitting one hierarchy against the other. This is appropriate in many situations, but human relations training is needed to help people learn conflict resolution skills. Moreover, much time is spent in meetings and one-on-one discussions to resolve issues that arise.

3. Employees must have a "corporate" viewpoint.

For the matrix to work, managers must see the big picture and their part in it. Employees who adopt a narrow functional or program perspective will

not make necessary compromises, and the give-and-take required to meet conflicting demands will be thwarted.

4. Administrative costs can be high.

The matrix makes efficient use of scarce technical personnel compared to the self-sufficient structure because specialists can be spread across several programs. However, the saving in technical specialists is frequently offset by the additional cost of administrative personnel. The functional boss needs additional staff to help monitor and coordinate technical personnel assigned to the programs. The time spent in meetings to coordinate specialists also represents additional administrative cost compared to functional or self-sufficient structures.

V. MATCHING THE STRUCTURAL APPROACH TO ORGANIZATION NEEDS

Let's return to the major point of this guide: structure is a tool to accomplish mission effectiveness. So far we have looked at a variety of structural tools. Vertical tools include span of control, levels in the hierarchy, and division of labor. Tools for lateral relations include teams, task forces, and liaison persons. The overall organization design of functional, self-sufficient, hybrid, or matrix structure are also tools for mission effectiveness.

Now we want to explore these ideas further by examining the organizational situations in which these structural approaches can be applied. Structure as a tool can tie together key elements of the organization situation, as illustrated in Exhibit 16. Overall structure should reflect the operational goals, production technology, leadership, environment, and human resources. The effective structure is designed to "fit" the situation. Perhaps more important, changes in the situation should lead to changes in organization structure. So let's briefly review the basic characteristics of production workflow, leadership, environment, goals, and human resources to see how they affect the preferred organizational structure.

Exhibit 16 about here

Operating Goals

All Air Force units are part of the overall Air Force mission of defending the United States and deterring aggression. Within this overall mission, Air Force units have specialized goals. These goals designate the ends sought through actual operating procedures. They define what the organization is actually trying to do. Operational goals represent the organization's effort to establish a distinctive competence.

Organizations pursue multiple goals simultaneously, but they can't maximize every goal. For example, an organization may have simultaneous goals of using human resources efficiently, providing growth and development opportunities for employees, responding flexibly to environmental changes, and achieving a high sortie rate. Top administrators must make choices and set priorities among operational goals, emphasizing the operational activities of primary importance to the organization's success.

Operating goals across organizations can be categorized as two competing "generic" goals. These two classes of goals are efficiency and innovation. Organization structure can be slanted toward achieving internal efficiency or toward achieving an innovative, flexible response to changing environment. Efficiency goals require the careful use of resources and often lead to a specialized, functional organization structure. Goals of innovation and mobility mean that the organization is concerned with change. Innovation means being on the leading edge of new products and services, and mobility

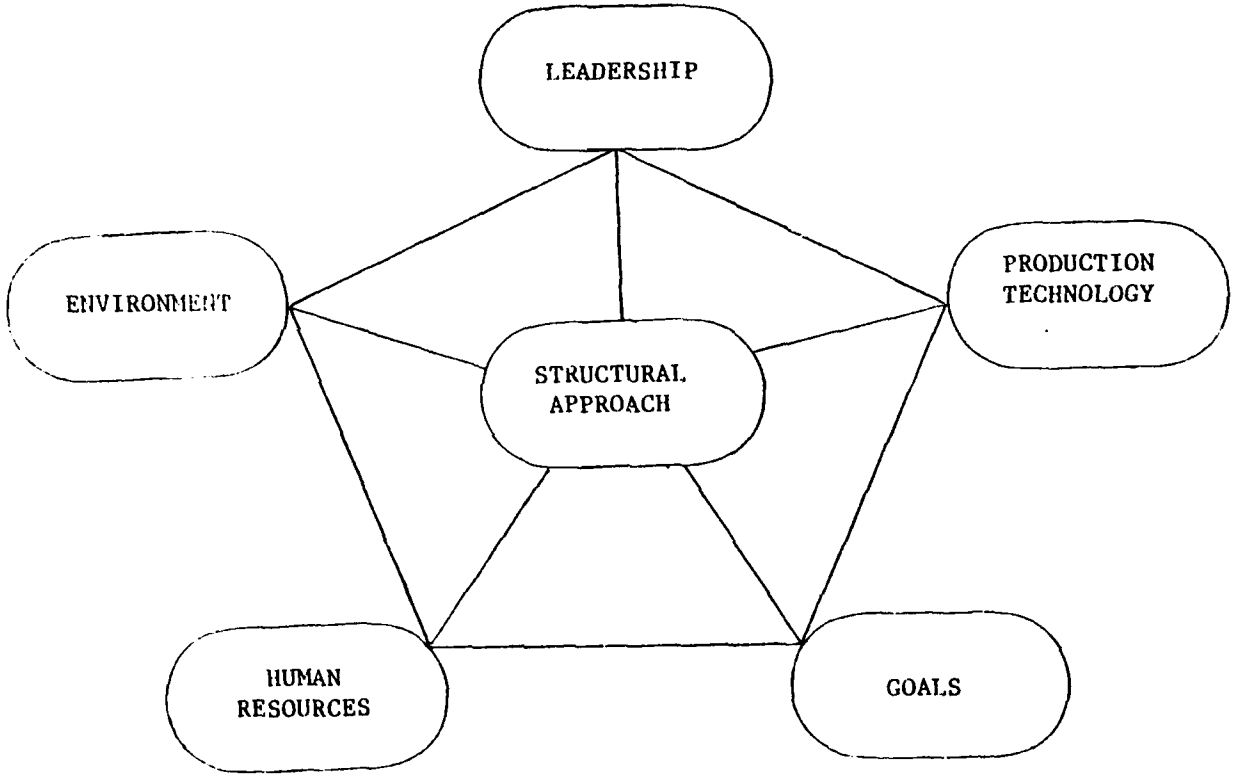


Exhibit 16. Organizational Characteristics that Influence Structural Approach.

means sensitivity to the external environment and rapid responses to new conditions.

These two classes of goals tend to be mutually exclusive. An organization designed to maximize one goal will do less well on the other. Managers thus must identify the basic purpose of the organization and design the organization structure to enhance that purpose. The use of the structural forms described in this guide provide different approaches to the efficiency versus innovation goals.

Exhibit 17 illustrates a continuum anchored on one end by the generic goal of efficiency, stability, and productivity, and anchored on the other end by the goal of innovation, mobility, and flexibility. As illustrated in Exhibit 17, the pure functional structure is appropriate for an internal efficiency orientation. The functional structure is very efficient in the use of resources, but it does not enable the organization to be flexible and innovative or to work with nonroutine technologies. In contrast, the program structure is most appropriate when the primary goal is innovation and flexibility. Each self-sufficient unit can be flexible and responsive. Each self-sufficient division is small and has all the necessary resources to perform its task. The program structure enables the organization to respond quickly to the demands of the external environment, but at a loss of internal efficiency. Resources are often duplicated among units, and standardization is low. However, despite the loss of efficiency, if the primary goal of the organization is to respond innovatively or to be mobile, then less internal efficiency is acceptable because efficiency is a less important goal.

Exhibit 17 about here

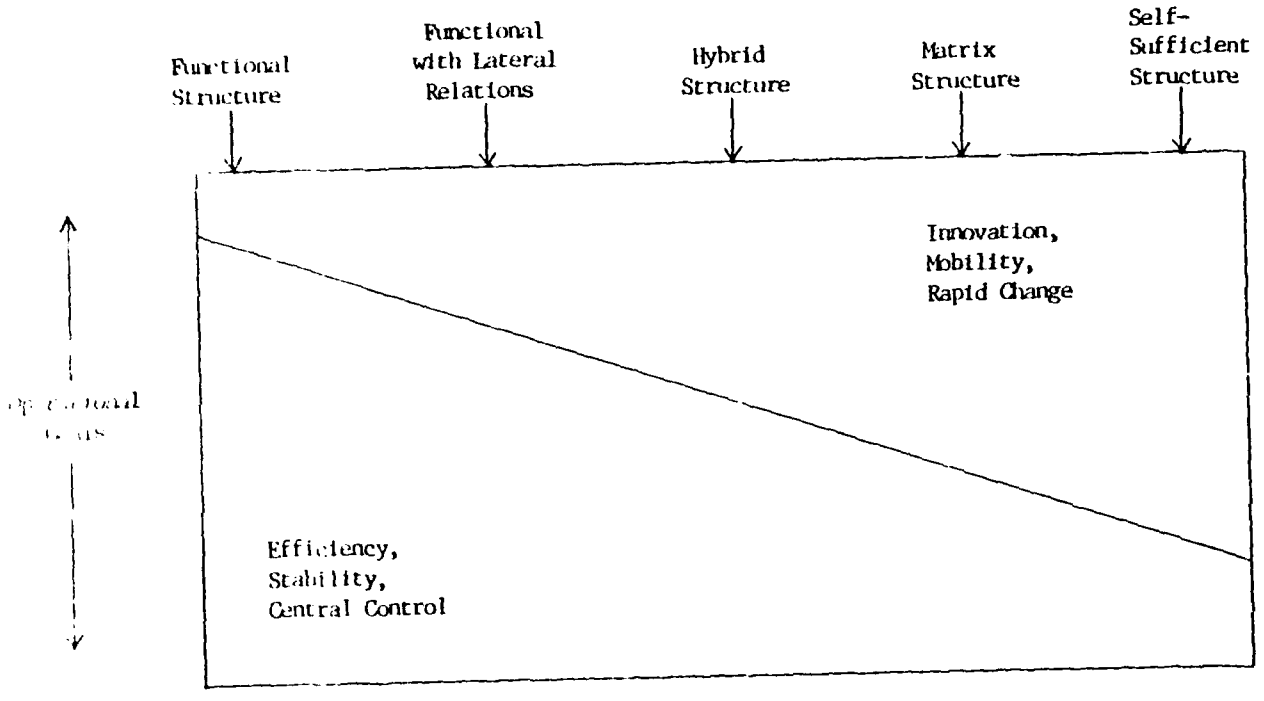


Exhibit 17. Relationship of Operating Goals to Structural Approach.

Exhibit 17 also illustrates how the other forms of structure--functional structure with lateral relations, hybrid structure, matrix structure--represent intermediate ways to help the organization strive toward the goals of efficiency and innovativeness. The functional structure with lateral relations provides greater coordination and hence a greater ability to be flexible and innovative than the pure functional structure. The hybrid structure is approximately in the middle. The hybrid structure has self-sufficient departments that are flexible and adaptive and functional departments to achieve efficiency in certain tasks. The matrix structure is designed to facilitate innovation, but it strives to be more efficient than the pure program structure. The matrix structure has program units, but it also has a functional line of authority that is used to attain efficient resource utilization across programs. The coordination across programs means that each program may be somewhat less flexible and innovative than if it had exclusive use of resources as in the pure program structure.

RULES OF THUMB: With respect to the five types of structure, the general rule of thumb for their application to mission orientation is as follows.

1. When operational goals are efficiency, stability, and control, then the functional approach to structure should be the primary form of organizing.

2. When the primary operational goals of the organization are innovation, mobility, or flexibility to respond to changing environmental conditions, then the self-sufficient approach to structure is appropriate.

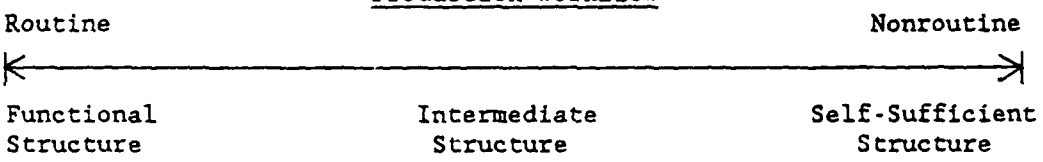
3. When organizations must achieve both efficiency and adaptability simultaneously, then an intermediate form of structure such as hybrid or matrix should be used.

Production Technology

Production technology refers to the tools, techniques and tasks of the organization. Production technology is the workflow, the basic activity performed to accomplish organizational outcomes. Production technology can be classified according to the extent to which it is routine or nonroutine, and the extent to which tasks are interdependent.

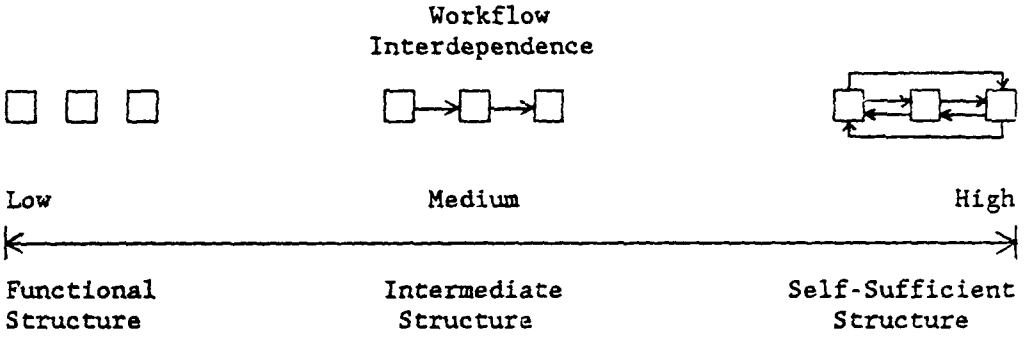
Routine vs. nonroutine. Routine workflow means that day-to-day job requirements are repetitious, and the activities contain little variety. Tasks are analyzable, and the work can be reduced to a series of mechanical steps with participants following an objective, well-defined procedure. Nonroutine work is the opposite. Nonroutine workflow is high in variety, with many unexpected problems. When new situations arise, it is difficult to identify the correct solution. Employees have to accumulate experience and judgment to solve problems that arise. Technologies may be complex and sophisticated, requiring training and experience to master.

Production Workflow



Interdependence. Interdependence is the extent to which employees or departments depend upon each other to accomplish their tasks. Low interdependence means that departments can do their work independently and have little need for interaction, consultation, or exchange of materials. Medium interdependence means that some exchange among departments is needed. Some information or materials may move sequentially from one department to the next. High interdependence means that departments constantly exchange information and resources in both directions. When interdependence is high,

each department must perform correctly in order for other departments to perform correctly. Organizations that have assembly line production, for example, must have each part of the production sequence working effectively in order for the whole sequence to perform effectively.



Finding the right structure. Shifts in production technology generally require a change in structure. Production technologies that are routine can use a vertical structure and centralized control. Nonroutine technologies, however, typically are associated with decentralization, greater delegation of authority to lower level employees, and greater use of lateral relationships. Similar patterns are true for interdependence across departments. When interdependence is low, there is little need for lateral coordination. When interdependence is high, lateral relationships are required, often in the forms of teams, task forces, and standing committees. Coordination may even reach the point of mutual adjustment where employees deal continuously on a face-to-face basis to coordinate their respective tasks.

RULES OF THUMB: With respect to production workflow, the following changes in technology should lead to changes in structure to achieve the right fit for mission effectiveness.

1. Routine technology uses a functional structure and centralized

control; nonroutine technologies use decentralization of control, lateral coordination, and teams or self-sufficient units at lower organization levels.

2. Independent departments require little coordination, and they can be located anywhere in the organization structure; highly interdependent departments require lateral coordination devices and decentralization of authority, and they should be located close to one another in the hierarchy to facilitate coordination and the resolution of joint problems.

Leadership

Organizational leaders do not drive trucks or run machines. They influence people. Leaders influence people by signaling values, goals, and beliefs to workers. Leaders also influence corporate culture, which is the values and understandings shared by members of an organization. Culture defines how members are expected to think and act, and how things ought to be done. Some leaders are inspirational, and can motivate people to do more than they normally would do, getting them to transcend their own interests for the sake of the division or organization. Effective top leaders communicate their values through public statements, ceremonies, and the reward system.

Structure is an important device for signaling cultural leadership style and values. Structure is a discretionary tool top leaders can use to signal what counts. The example of General Creech described at the beginning of this guide illustrated how the new, decentralized TAC structure signaled his values and helped create a new corporate culture. Structure was an extension of the leader's vision, goals, and values.

What are leadership values? One value is for decentralization of decision making. Some leaders want to encourage widespread participation. They encourage subordinates to use trial and error to learn to make decisions.

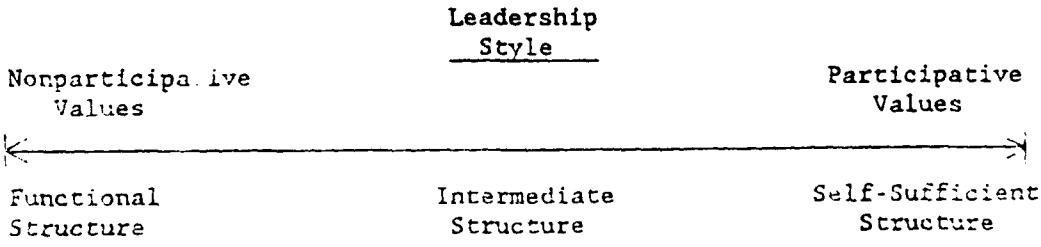
by Rechin and Parker © 1982 Field Enterprises, Inc., Courtesy Field Newspaper Syndicate.

This leadership philosophy encourages an internal culture that encourages employee participation and democratic processes.

The opposite value is centralized control. Some managers, because of personality, high visibility, or pressure from above, prefer to be in close control of the organization. This value system stresses the vertical hierarchy, adherence to rules and procedures, and formal channels of communication. This approach to leadership discourages widespread participation.

Leaders communicate the value system both through their behavior and the organization's structure. For example, a division manager at a high technology company was amazed to learn how he sent wrong signals to employees. His slightest facial expressions were always being evaluated. If he shut the door or was in a less than buoyant mood, employees assumed something was wrong. In another division, a senior manager told how employees knew in advance when someone was to be laid off. Employees watched him and noticed that he always dressed in his pink shirt and matching tie the day layoffs were to be announced. Signals work the same way in the Air Force.

> If a commander insists on daily stand-up meetings, this value cascades to lower levels. Middle level officers will also require briefings to ensure their act is together for briefings made to the boss. On the other hand, when the commander spends his time walking around, turns decision making back to middle level managers, and is kept informed more on an exception basis, this same value is transmitted downward. Middle managers will adopt the same values for running their squadrons or departments.



Leaders have structural discretion because they can influence the use of teams, task forces, and perhaps the creation of self-sufficient structural units. In this way leaders signal to the organization the desire for decentralization and participation. Sometimes a nonparticipative approach is required because of the need for an emergency response, high control from the top, because the mission entails a big risk, or because of other pressures that require strict control from the top. Within these constraints, managers can use structure to infuse their organization with a management philosophy and cultural value.

A vertical structure can be used to convey the value of central control. Emphasis on rules and regulations, a small span of control to ensure close supervision, a single line of authority, and resolving conflicts at the top all communicate nonparticipative values. By contrast, the values of decentralization and participation can be communicated by the implementation of self-sufficient units or by lateral relationships. The creation of teams and task forces encourages people to resolve issues at lower levels. Weekly meetings between commanders and NCOs can be used to encourage face-to-face horizontal communication among NCOs. The use of lateral relations to break down barriers across departments reinforces coordination and decentralization as the primary value.

RULES OF THUMB: The management value system created by the top leader can reflect either centralized control or decentralization and participation. Organizational structure is a powerful medium for communicating and reinforcing these values.

1. The value of nonparticipation can be communicated through the vertical organization structure, including small span of control, formal

channels of communication, a refined division of labor, and centralized decision making. Lateral relationships can be minimized.

2. Values of decentralization and participation can be communicated through the use of lateral coordination devices such as teams, task forces, liaison personnel, committees, and public statements encouraging the use of face-to-face discussion and mutual adjustment across departments. Decision making can be decentralized to the lowest level consistent with appropriate information.

Environment

The environment includes the people, organizations, agencies, communities, and other events and activities that exist outside the focal organization, yet affect it in some way. As illustrated in Exhibit 18, the environment typically includes several sectors, including users of the organization's product or service, developments in new technology, the Air Force command structure as well as federal and state regulations, and suppliers of material resources. For a center in AFSC, users include MAC, SAC, TAC, and other commands. The technology sector includes anything in the electronics world. Regulations include procurement regulations, EPA, DOD specifications, and technical standards. Resource sectors involve the supply of parts, people, and money. The community includes the Red Cross, United Way, and waste disposal.

Exhibit 18 about here

The external environment is important to organization structure in two ways. First, specific environmental problems may require the creation of a

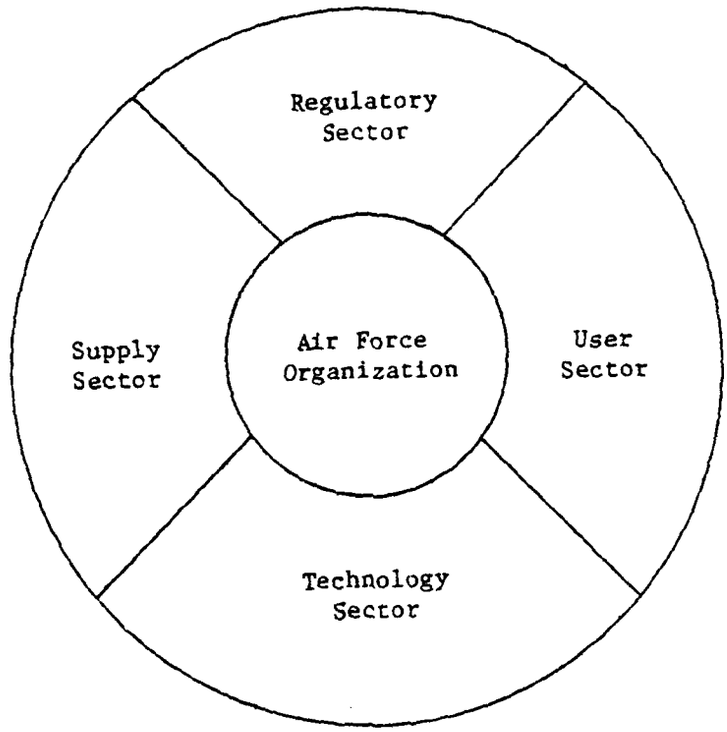


Exhibit 18. Sectors in the Environment of an Organization.

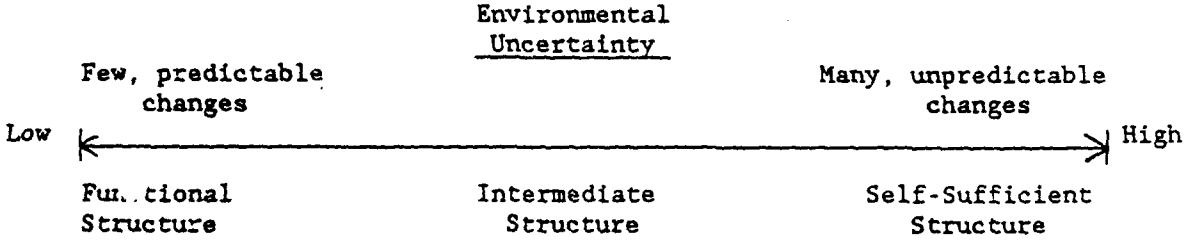
new department. One example is the Competition Advocacy Directorate created at each AFLC base to ensure competitive bidding for all supplies. One mid-level manager said, "The creation of this department was a direct response to the national publicity about $700 hammers." Other environmental pressures, such as regulations concerning the transportation of hazardous materials, the Environmental Protection Agency, Equal Employment Opportunity Commission, or difficult community relationships may require the addition of new tasks or departments within the organizational structure. At European bases, community relationships and political pressures are especially strong. Commanders must give careful thought to the impact on the local community before making a decision. Different values, such as more time off for medical problems and social works programs, may require additional personnel to act as an interface with relevant external sectors.

The second way the environment influences organization structure is through uncertainty. Uncertainty reflects the extent to which external events change rapidly and unpredictably. Changing external events means that decision makers do not have good information about environmental factors, and they have a difficult time predicting external changes. For example, in AFSC, Congress frequently changes budget allocations for weapon systems priorities without advance notice. The organization must adapt quickly to these changes to continue its mission. In SAC, the environment may stay relatively stable so that once the structure is in place it can persist for several years. Gradual, evolutionary changes in technology, resources, or local communities will slowly lead to changes in structure.

For example, the Model Installation Program (MIP) was a response, in part, to environmental pressures for efficiency. Under the MIP program, designated installations may request variances to standard operating

procedures to improve mission performance. Supplies that are readily available on the local civilian market may be purchased locally rather than going through standard supply channels. Administrative functions previously allocated to two departments can be consolidated into one department. Groups may be given ownership over specific tasks. Under the MIP, bases try to achieve a better fit with their specific environments.

Uncertainty in the external environment typically leads to an organizational structure that has less central control and relies more heavily on teams, task forces, and other lateral coordination devices. Environmental uncertainty requires change within the organization. Organization wide changes require coordination. Thus an organization operating in a highly uncertain environment must be continuously processing information horizontally as it adapts to new external requirements. An organization in a stable environment can rely more on the vertical structure. Changes are less frequent and coordination is less intensive. Formal channels of communication suffice for mission accomplishment. These differences in structure are illustrated in the following continuum.



RULES OF THUMB: With respect to the environment, the following rules suggest which structure is appropriate.

1. When an important, unexpected problem occurs in the environment, the organization can respond by creating a temporary team or task force, or a permanent new position or department.

2. When the environment is highly uncertain and the organization must respond to frequent changes, decentralized control, lateral teams, or self-sufficient structures are needed for quick responses.

3. When the environment is certain and few external changes occur, centralized control and a functional structure can be used.

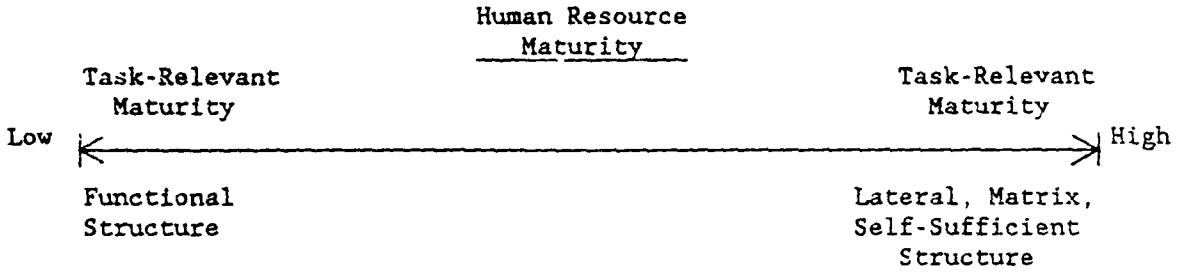
Human Resources

Human resources are the manpower available to an organization. The skills and qualifications of line employees can vary widely from organization to organization. In AFSC, the average employee may have a college degree in a technical subject, be older, and have several years of work experience. A sizable percentage of the workforce may be civilians with longer service in job classifications. The maintenance deputate at a SAC base may have employees who are relatively youthful, who have high school education with additional technical training, and who have been on the job only a short time.

These differences can be summarized as the task-relevant maturity of the human resources. Task-relevant maturity is a combination of education, training, experience, age, and ability to take responsibility. When task-relevant maturity is low, employees need more structure. They need precise and detailed instructions and close supervision. Employees will not be comfortable with uncertainty and ambiguity, and they may lack the social skills to deal with frequent disagreements and conflict.

When task-relevant maturity is high, employees need less supervision. Managers are involved only to establish objectives and provide support. Employees may enjoy some uncertainty and ambiguity because of the opportunity to resolve unusual situations. Maturity and social skills will be higher so that employees can resolve difficult issues among themselves. Managers need

not provide a structured approach and can decentralize authority and delegate responsibility to employees.



With respect to organization structure, when the organization has employees low on task-relevant maturity, then functional structure is more appropriate. The functional structure provides more direction and control. The functional structure also provides a larger pool of technicians so that more opportunities for training and development are available. Employees are more comfortable with vertical control than with the complications of lateral coordination.

On the other hand, employees high in task-relevant maturity can work well in a decentralized structure. The creation of task forces and teams that provide opportunities for horizontal coordination are appropriate. Mature employees are important to the functioning of matrix structures. The matrix is especially confusing because of the dual lines of authority. Mature employees have the conflict resolution skills and corporate viewpoint needed for success.

Another aspect of manpower relevant to organization structure is scarcity. When human resources are plentiful, the organization has the option of using a self-sufficient structure because duplication of resources is not a problem. When human resources are scarce and must be carefully allocated across organizational tasks, then other structures are required. The

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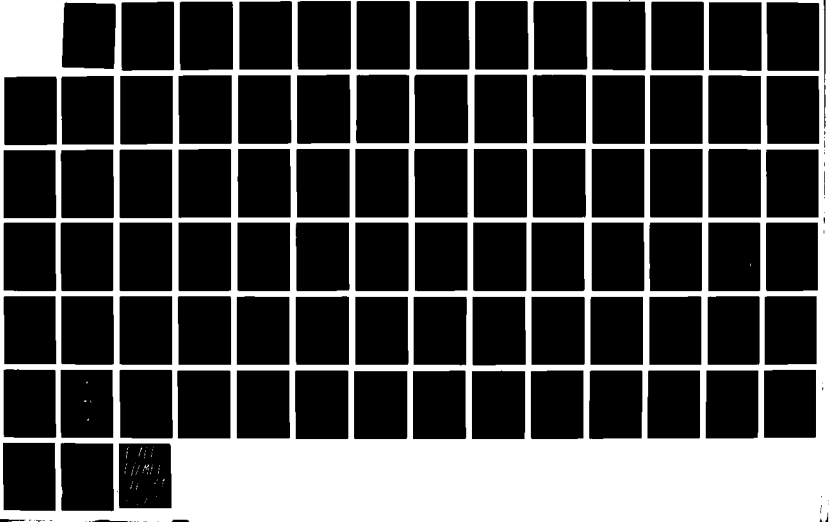

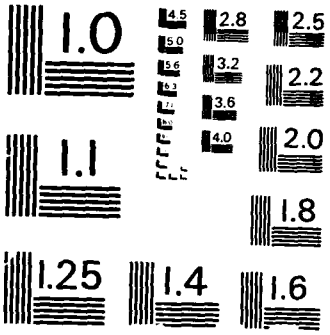
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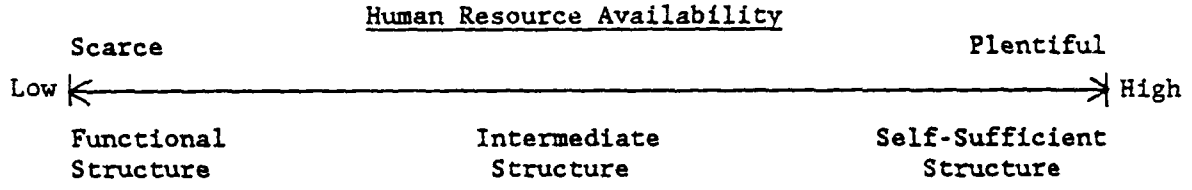
functional structure is more efficient because all people in the same skill area are grouped together. The matrix structure provides good use of scarce human resources by allocating personnel across program units. The availability of adequate personnel allows administrators to move toward the structure that utilizes self-sufficient units. Scarcity of human resources limits the structural options to those based on the functional approach.



RULES OF THUMB: With respect to human resources, the following rules of thumb apply.

1. When human resource task-relevant maturity is low, the functional structure with greater centralization and supervision is appropriate. The use of employee teams, task forces, and other lateral relations should be minimized.

2. When human resource task-relevant maturity is high, the structure can encourage decentralization, delegation of authority, and the use of teams, task forces, and perhaps matrix structure. Employees have sufficient maturity to deal with ambiguity and conflict.

3. When human resources are in abundant supply, the organization has the option to use program structure and hybrid structure because sufficient resources are available for duplication of activities.

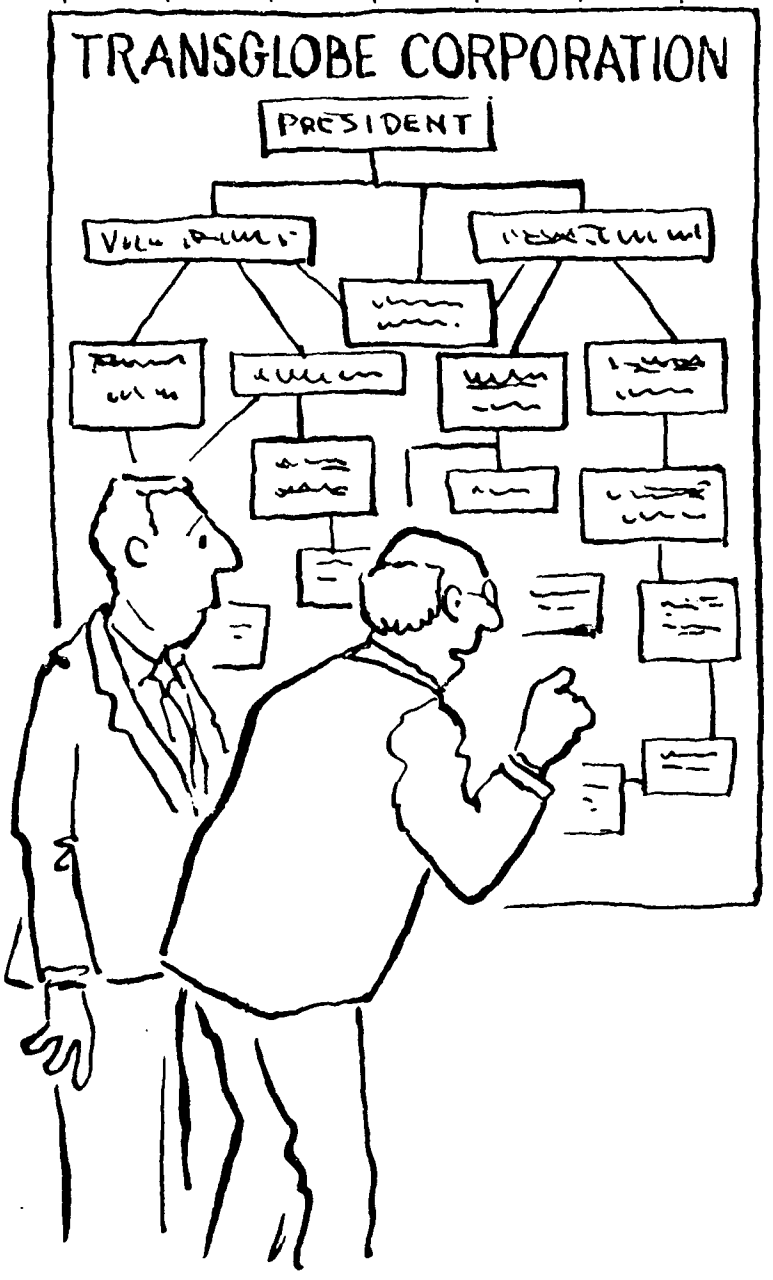
4. When personnel are scarce, duplication of resources must be avoided. The matrix structure is preferable to the program structure, and the functional structure is preferable to a hybrid structure. The matrix

structure spreads employees across several programs, and the functional structure groups together similar skills for efficient utilization.

VI. DUAL REPORTING IN ORGANIZATIONS: WHEN AND WHY

The matrix structure, described in Chapter IV, requires dual reporting relationships, which often are frustrating and confusing for managers. However, the matrix structure is not the only situation where dual reporting is required. Managers in large, complex organizations often find themselves puzzling over the need for dual reporting. The creation of a team may require team members to report to the team manager in addition to their regular supervisor. Hybrid structures often involve placement of specialists within self-sufficient units who also have to coordinate with a central functional department. The Information Systems Commander located at each base formally reports to AFCC, and also is responsible to coordinate with the senior installation commander. Dual reporting relationships sometimes are represented by dashed lines on the organization chart; other times they are simply known to managers but are not drawn on the organization chart.

Dual reporting often causes frustration and consternation. One senior manager said, "Having two bosses is like having none at all." Yet another manager said, "The worst part is not having control over your subordinate. You have to share him with someone else." These difficulties and frustrations raise the question of whether dual reporting is really needed. As a practical matter, dual reporting often is a way to use structure to achieve coordination



"No wonder we have a communications problem—your box isn't connected to anyone."

and control. A large organization may be widely dispersed so that people are in different geographical locations. Managers who have the expertise to oversee a technician may be in a location different from the managers who have the responsibility for mission accomplishment. The problems associated with geographical dispersion and the separation of technical and mission responsibility lead to the need for dual reporting. Consider the following example from Intel Corporation.

> At a staff meeting we were trying to decide to whom the security personnel at our new outlying plants should report. We had two choices. One would have the employees report to the plant manager. But a plant manager, by background, is typically an engineer or manufacturing person who knows very little about security issues and cares even less. The other choice would have them reporting to the security manager at the main plant. He hired them in the first place, and he is the expert who sets the standards that the security officers are supposed to adhere to throughout the company. And it was clear that security procedures and practices at the outlying plants had to conform to some kind of corporate standard.
>
> There was only one problem with the latter arrangement. The security manager works at corporate headquarters and not at the outlying plant, so how would he know if the security personnel outside the main plant even showed up, or came in late, or otherwise performed badly? He wouldn't. After we wrestled with the dilemma for awhile, it occurred to us that perhaps security personnel should report jointly to the corporate [security] manager and to the local plant manager. The first would specify how the job ought to be done, and the second would monitor how it was performed day-by-day.
>
> While the arrangement seemed to solve both problems, the staff couldn't quite accept it. We found ourselves asking, "A person has to have a boss, so who is in charge here?" Could an employee in fact have two bosses? The answer was a tentative "yes."(8)

Dual reporting is a powerful means of coordination. The person with two bosses is responsible to satisfy the requirements of each, and thus acts as coordinator between technical and mission requirements. The security

personnel at Intel would be drawn on the organization chart as in Exhibit 19. The security person is in the normal line of authority to the outlying plant manager, and also reports to the security chief at headquarters. The security officer must balance the demands of both plant and security requirements.

Exhibit 19 about here

In many organizations one reporting relationship is drawn as a dashed line, which means that the relationship is not based on formal authority and is subordinate to the solid line relationship. A dashed line indicates a responsibility for coordination. A solid line indicates a relationship based on formal authority. The superior has the power to evaluate performance, determine promotions and raises, and to have the final say in a conflict. But no matter whether the lines are dashed or solid, dual reporting is an effective coordination device.

Whomever is given solid line authority typically is seen to have the more pressing requirement to accomplish the organization's goals. Consider the case of quality assurance in a manufacturing plant. The organization may wish to have uniform quality assurance standards at all plants. The quality assurance supervisors' professional methods, practices, and standards are set by the headquarter's office. However, the quality assurance person must be located in the plant where goods are produced. The plant manager gives the quality assurance person mission-oriented priorities and asks him to work on specific business problems. The plant manager may wish to release certain shipments even if rigid quality standards are not met, perhaps because the customer needs the shipment immediately. But the plant manager has little knowledge or concern about quality assurance as a separate function. The

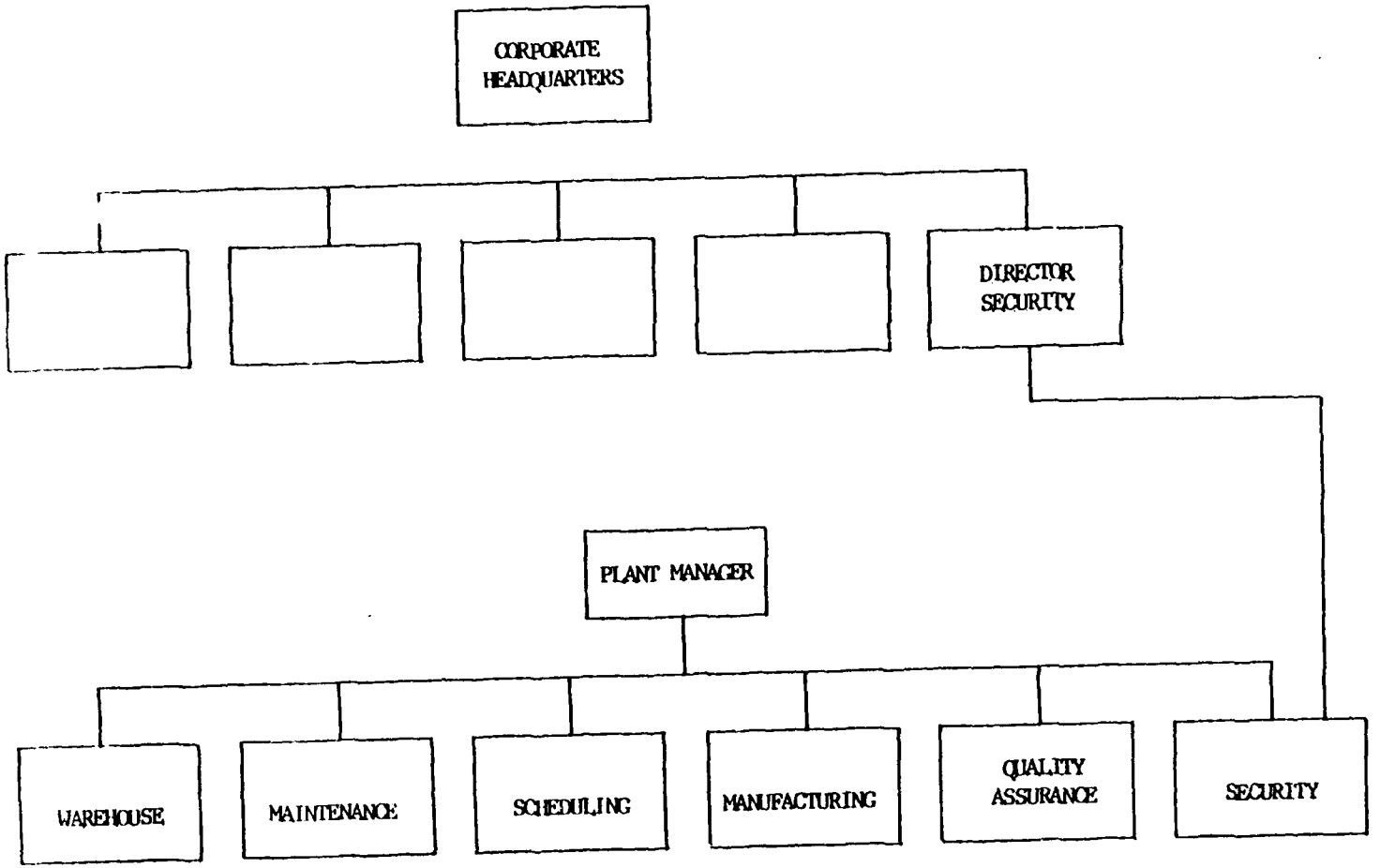


Exhibit 19. Dual Reporting at Intel.

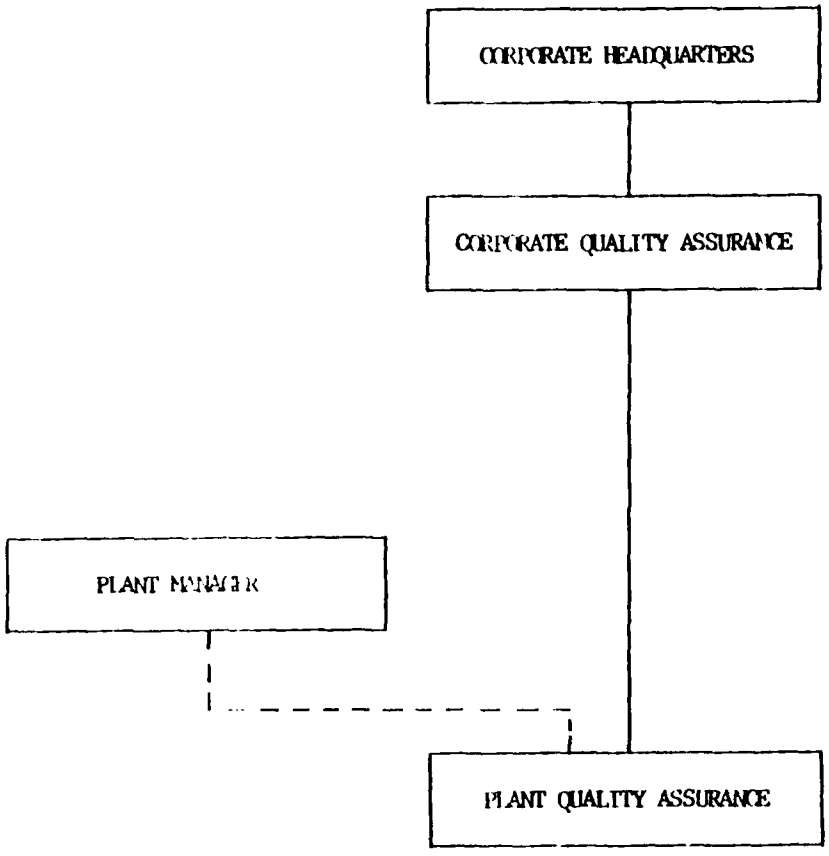
quality assurance supervisor at headquarters makes sure that the plant quality person is trained to do his work in a technically proficient manner, and monitors his technical performance. If the person shows ability, his best chance of promotion is to be quality assurance supervisor at another plant or to move up to new opportunities at headquarters. This is much the same dilemma that appears in Information System Squadrons.

Should the plant manager or headquarter's quality assurance manager have solid line authority over plant level quality personnel? If senior management decides that quality standards are paramount, then solid line reporting to the headquarter's quality personnel is needed. This reporting relationship is illustrated in Exhibit 20a. The quality assurance person would simply be located at the plant, would have dashed line responsibility to the plant manager, and would coordinate his activities with plant activities. If, however, quality assurance standards are not stringent, and it is important for the quality assurance person to be part of the plant team in order to solve problems and adapt to changing conditions, then the solid line reporting should be to the plant manager, as illustrated in Exhibit 20b. A dashed line reporting relationship to headquarters will ensure responsibility for minimum quality standards, training, and technical proficiency.

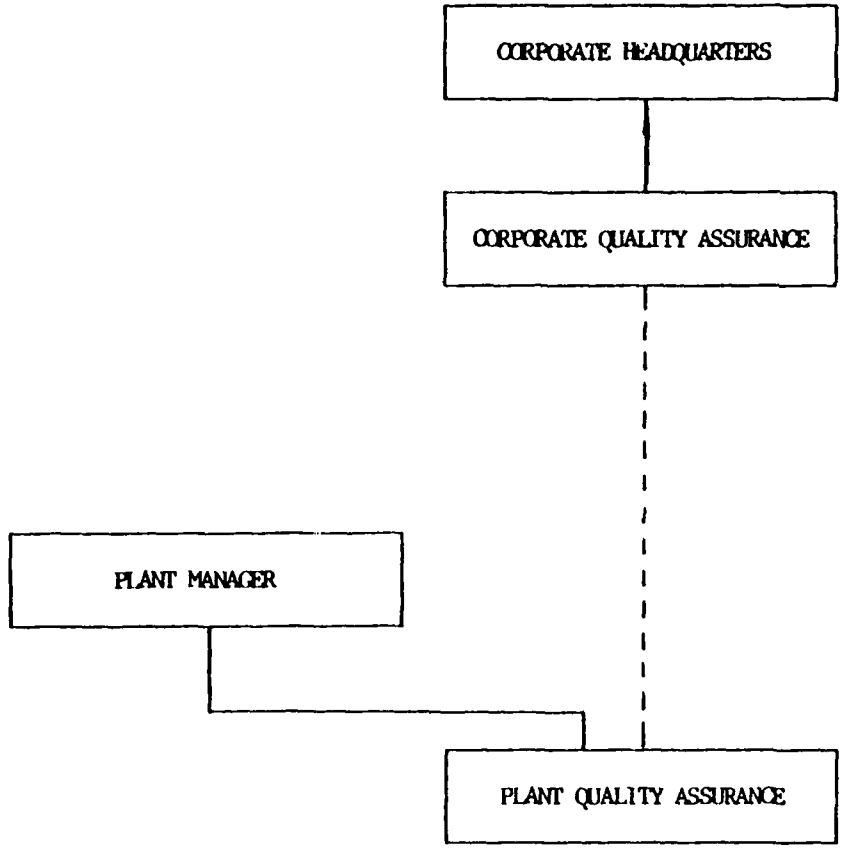
Exhibit 20 about here

In the Air Force, the role of logistics personnel in System Program Offices (SPOs) is an example of dual reporting. The mission of a SPO in AFSC is to oversee the development of new systems or materials such as air frames, engines, electronic devices, and armament. The structure of the SPO is focused on assuring that the product being developed meets performance

Exhibit 20. When to Use Solid Line vs Dashed Line in a Dual Reporting Relationship.



a. Reporting relationship if quality standards are paramount.



b. Reporting relationship if plant mission is paramount.

specifications and is completed in a timely and efficient manner. A logistics specialist is assigned to a SPO to ensure the supportability of the product once it goes "on line" and into the field. Although the logistics specialist is located in the SPO and is a part of the SPO team, he reports to a commander in AFLC rather than to the Systems Command. The solid line reporting is to AFLC, and counterbalances the pressure a SPO director may place on everyone to get a new product into the field. By reporting to AFLC, the logistics specialist can resist this pressure.

To overcome the pressures and frustrations associated with dual reporting relationships, a good procedure is to explicitly write down the responsibilities of the respective supervisors. Typically one supervisor is responsible for technical standards and training, and the other supervisor is responsible for coordinating several departments toward program or product accomplishment.

RULES OF THUMB: Dual reporting relationships are a way to achieve coordination in organizations.

1. The dual reporting relationship can be used when the supervisors who have technical expertise and the supervisors who are responsible for immediate mission accomplishment are at separate locations.

2. The dual reporting provides a strong incentive for the person with two bosses to balance the requirements from each and to achieve coordination between function and mission requirements.

3. Managers have to decide whether the dual reporting lines are equal, or whether one is given formal authority (solid line) and one is given coordination responsibility (dashed line). The relative authority is determined by the priority given to each task in mission accomplishment.

4. Dual reporting should be accompanied by some form of dual appraisal system to keep the reporting system in the correct balance.

5. Dual reporting can tax the patience of the managers involved. Many managers disliked dashed line responsibilities, because it blurs traditional vertical relationships. However, dual reporting relationships serve a distinct purpose, which is coordination more than control. Dual reporting should be implemented with the understanding that it facilitates coordination between geographically dispersed units, and was not intended to facilitate vertical control. (As in matrix, and other forms of structure, there is a tradeoff between vertical control and horizontal coordination. Finding the correct balance for the organization is important, and often dual reporting relationships help define that balance.)

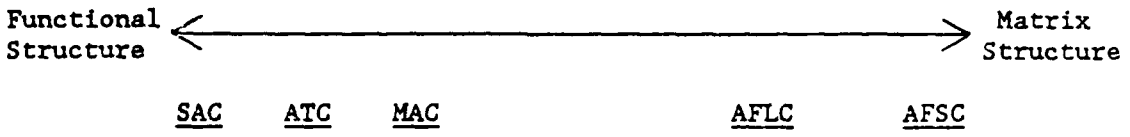
VII. STRUCTURAL APPLICATIONS IN THE AIR FORCE

Chapter IV described five structural types--functional, functional with lateral relationships, hybrid, matrix, and self-sufficient structures. Chapter V described when each structural approach should be used, depending upon the characteristics of operating goals, production technology, environment, human resources, and leadership.

Air Force organizations represent diverse goals, technologies, and environments. Air Force organizations also use a number of the structures described earlier in this guide. For example, at the wing and deputate level, SAC and ATC use the functional approach to structure. These organizations tend to be controlled in vertical fashion. MAC also uses a functional structure, but encourages informal lateral communications. AFLC structures use formalized lateral teams, so that horizontal coordination is greater than for SAC, ATC, or MAC. AFSC uses elements of the matrix structure. Two chains of command are used, one for functions such as engineering, contracting, and financial control, and one for System Program Offices. To use a visual reference similar to those used in previous chapters, structures in these five commands would appear as follows:

"For what it's worth, the new organization chart is out, and you're not in your box."

1. Structures for MAJCOMS



The question to be addressed in this chapter is, "Do these structures fit the situational factors such as goals, production technology, and environment? The purpose of this chapter is to examine in a systematic way whether the structures actually used in the Air Force fit the situations in which they are applied.

Data on Air Force Structures

During 1985, the USAF Academy and the Leadership and Management Development Center organized a series of research teams to collect data from selected sites throughout the Air Force. The sites were selected to obtain data about many different types of organizations at reasonable cost. The final selection included 12 stateside and 7 USAFE bases. This represented 25 Wing, Center, or Division level organizations from SAC, TAC, USAFE, MAC, AFSC, AFLC, ATC, AFCC, and ISS.

Data about the structure and the organizational setting were gathered through personal interviews, group discussions, and structured questionnaires. A total of 25 senior commanders, 121 deputy commanders, and 399 squadron commanders or their equivalent participated in the study. All data were collected between May and August, 1985.

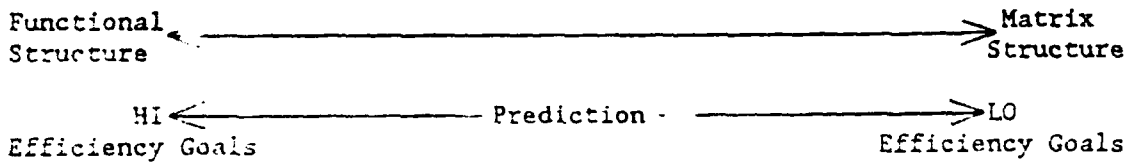
This guide does not provide detailed data or research analyses, but does report an overview of the findings to develop the central theme described in the previous chapters. The findings are laid out in a series of visual charts to illustrate structural relationships. These relationships were tested in a

systematic, statistical fashion, and statistically significant differences were observed between commands on most measures. This means that differences in goals, production technology, human resources, technology, and environment were indeed related to differences in organization structures.

The figures that follow test several predictions about when structure should be used, although every command is not included at this point. The initial data include comparisons among SAC, ATC, MAC, AFLC, and AFSC because they provide a contrast between functional, functional with lateral relations, and matrix structures.

Operating goals. Based on the Chapter V discussion, a high priority given to efficiency goals is typically associated with the functional structure. Functional structures capitalize on economies of scale in the use of resources, and the grouping together of common tasks minimizes duplication and waste. Matrix structures also are designed to achieve efficiency goals, although other goals are pursued simultaneously. In a matrix structure the dual chains of command for function and program are purposefully designed to achieve both efficiency and innovation. A self-sufficient structure, by contrast, is designed to achieve innovation and adaptability, but without concern for efficiency. Thus efficiency goals may be pursued in several types of structure ranging from functional to matrix. Innovation goals, however, will not be pursued with a functional structure. These ideas are depicted as follows:

2. Efficiency Goals



3. Innovation Goals

Functional Structure ⟷ Matrix Structure

LO Innovation Goals ⟷ Prediction ⟷ HI Innovation Goals

To determine whether these relationships are as predicted, the comparison of efficiency goals to the type of structure used in the five commands are illustrated in the figure below. To keep this at a simple yet instructive level, the actual numbers and statistical tests are omitted. The data from each command are reported by looking at scores relative to one another, and the data are reduced to classification as high (HI), medium (MED), and low (LO). The relationships in these pictures are backed by statistically significant findings. The figure below illustrates the predicted versus actual efficiency goals compared to the type of organization structure.

4. Efficiency Goals

Functional Structure ⟷ Matrix Structure

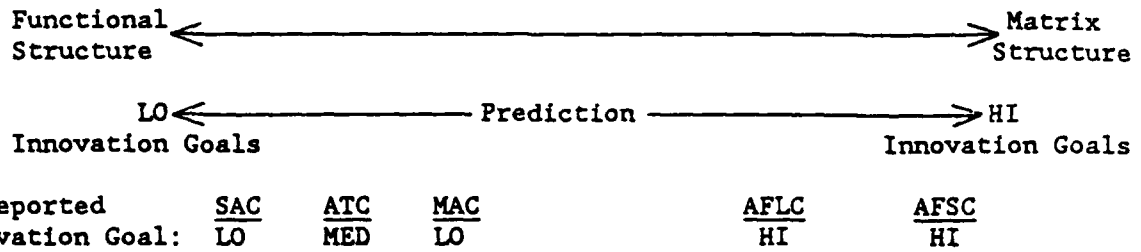
HI Efficiency Goals ⟷ Prediction ⟷ HI Efficiency Goals

	SAC	ATC	MAC	AFLC	AFSC
Reported Efficiency Goal:	MED+	HI	MED+	HI	HI

Note in the figure 4 that the reported efficiency goals in SAC, ATC, and MAC are MED+ to HI, and the reported efficiency goals in AFLC and AFSC are HI. One might expect SAC and MAC to be HI rather than MED+, but overall these relationships are what would be predicted based upon the structures used in these commands.

The figure for the relationship between innovation goals and structure is as follows.

5. Innovation Goals



Reported Innovation Goal:	SAC LO	ATC MED	MAC LO	AFLC HI	AFSC HI

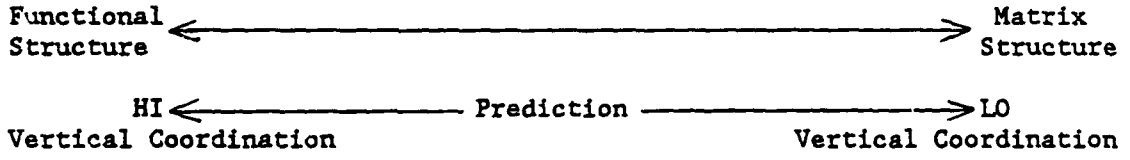
Figure 5 above also shows an appropriate fit between Air Force practice and structural theory. ASC, ATC, and MAC all report LO to MED innovation goals, which is correct for a functional structure, because functional structures do not have the capacity to provide the lateral coordination needed for large scale innovation. Note that AFLC and AFSC report HI innovation goals. Again, innovation goals are appropriate in structures that have formal lateral relationships because the organizations have capacity for technical coordination. Thus the matrix structure in Systems Command is consistent with the mission of developing innovative weapon systems in an efficient manner. Both goals are emphasized. The same is true for Systems Command. The three operational commands (SAC, ATC and MAC) all place less priority on innovation compared to the efficient execution of their mission. The reported goals of Air Force commanders and the appropriate structure for achieving those goals coincided with high accuracy.

Vertical and horizontal coordination. Each structural approach provides for a specific type of coordination. In the pure functional structure, most coordination is along the vertical chain of command. For example, in operational commands such as SAC and ATC, the human resources have somewhat lower skills and training levels so that vertical direction with formal feedback provide an effective way of coordinating work activities. However, in AFSC units, with the dual pressure for both innovation and efficiency,

compounded by time pressure to complete the prog[illegible]s soon as possible, there is great need for lateral coordination between program and functional managers. A benefit of the matrix or of horizontal teams is to provide lateral coordination without the pressure to send all issues up the chain of command to top managers. In organizations that stress lateral relationships, vertical coordination should be less and lateral relationships should be high.

Using the same visual arrangement as before, the following figure illustrates the use of vertical coordination in each command.

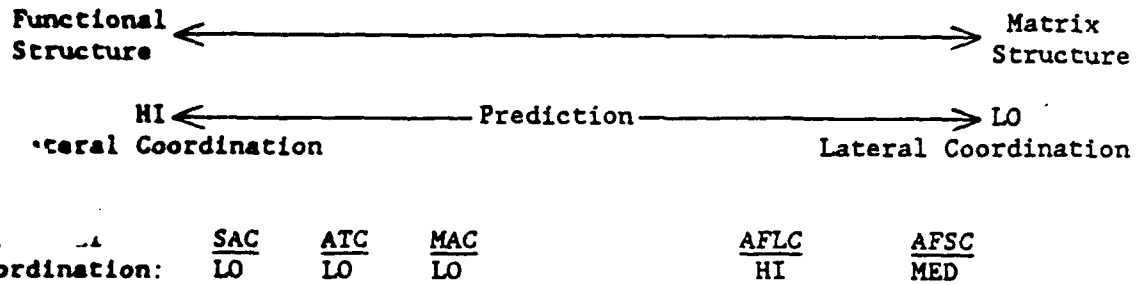
6. Vertical Coordination



Reported Vertical Coordination:	SAC	ATC	MAC	AFLC	AFSC
	MED	MED	MED	MED	LO

The above data suggest that functionally structured commands use a medium amount of vertical coordination, and so does AFLC. But AFSC reports a low amount of vertical coordination, which is consistent with the matrix structure. The functional structures in SAC, ATC, and MAC, compared to AFSC generally agrees with the theory, although the functional structures would be expected to rely more heavily on vertical coordination. Part of the explanation may be in how these organizations use lateral coordination, which is illustrated in the following figure.

7. Lateral Coordination



	SAC	ATC	MAC	AFLC	AFSC
Coordination:	LO	LO	LO	HI	MED

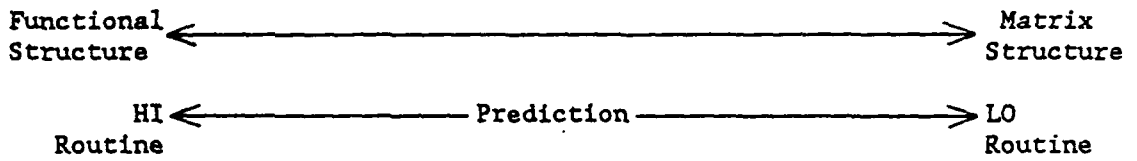
Figure 7 suggests a fit between type of structure and the methods reported by commanders for lateral coordination. There is a low degree of lateral coordination in SAC, ATC, and MAC, and higher lateral coordination in both AFLC and AFSC. AFLC used a functional structure with formal integer teams and other devices to achieve horizontal coordination. One unexpected finding is the reported medium lateral coordination in AFSC combined with the reported low vertical coordination (Figure 6). The matrix design all but requires lateral information flows, and encourages coordination along dual chains of command. The reported low and medium scores is puzzling, because observations of AFSC bases confirms frequent hallway discussions and a constant demand for meeting room space. In the perceptions of respondents, however, AFSC uses less coordination than AFLC.

Production technology. Production technology represents the nature of the primary task workflow of the organization. The production technology that characterizes workflow can be described as either routine or nonroutine. A routine technology means the same tasks tend to be performed over and over, and that tasks are clear and well understood. A nonroutine technology means the workflow is characterized by high variety. Individuals encounter a large number of unexpected problems. Moreover, it is difficult to identify a correct solution because there is no store of techniques or procedures to tell workers exactly what to do. Basic research and strategic planning are

considered nonroutine technologies. Auditors, draftsmen, and bank tellers are considered to be routine technologies.

The expected structural relationship is that functional structures are designed to fit routine tasks, and structures with lateral relationships, including the matrix structure, are designed to fit nonroutine tasks. Figure 8 below indicates the purported level of task routineness in the commands.

8. Routine Technology



Reported Routine Technology:	SAC	ATC	MAC	AFLC	AFSC
	MED+	HI	HI	LO	MED

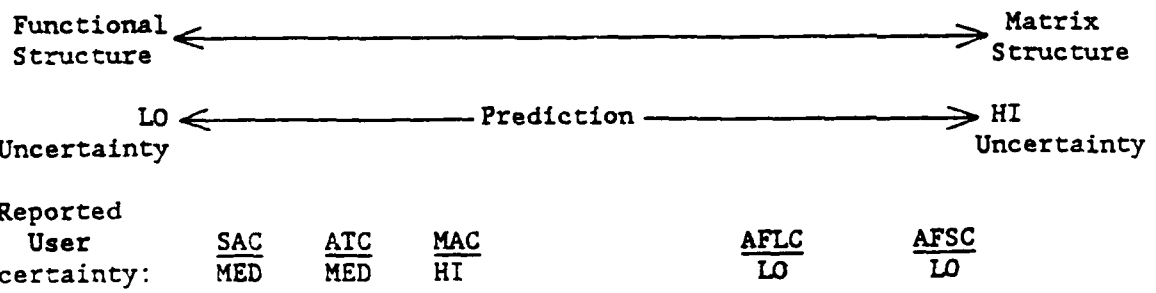
The data from Air Force commanders indicate a correct relationship between structure and production technology. SAC, ATC, and MAC are either MED+ or HI in task routineness. AFLC and AFSC have tasks that are perceived to be LO or MED. The less routine tasks in AFLC and AFSC require more complex structures that facilitate horizontal communication and coordination. Two interesting observations are the MED scores for task routineness from both SAC and AFSC. SAC may have less repetitious tasks than ATC and MAC because of its aging weapon system demanding innovative fixes combined with its preparation for newer weapon systems. The planning for the acceptance of new weapon systems had begun at the time the data were gathered, yet the weapon systems themselves and their implementation had not yet occurred. The reported medium task routineness in AFSC is surprising, because the research task was expected to be less routine than the logistics task. Respondents did not see it that way, and this may be consistent with the lesser amounts of vertical and

horizontal coordination reported in Figures 6 and 7. Perhaps the perceived task in AFSC is more routine and does not require as much vertical and horizontal coordination, as might be expected.

Environmental uncertainty. Structure should reflect demands from the external environment. As the degree of uncertainty in the environment increases, the structure should change from a strict functional orientation toward lateral relationships, a matrix, or even to a self-sufficient structure. The commanders who were respondents in the survey described environmental uncertainty in four sectors. These included the user sector, regulatory sector, technological sector, and resource sector. Each sector was rated with respect to degree of uncertainty.

The user sector refers to clients served by the organization. For example, "operations" is the user of the services provided by maintenance units that fix aircraft and have them ready to fly on schedule. Aircraft maintenance, in turn, is one of the greatest users of supply. High uncertainty in the user sector indicates difficulty in predicting demands coming from the organization's clients. Perceived uncertainty in the user sector and its relationship to structure is illustrated in Figure 9 below.

9. User Sector Uncertainty



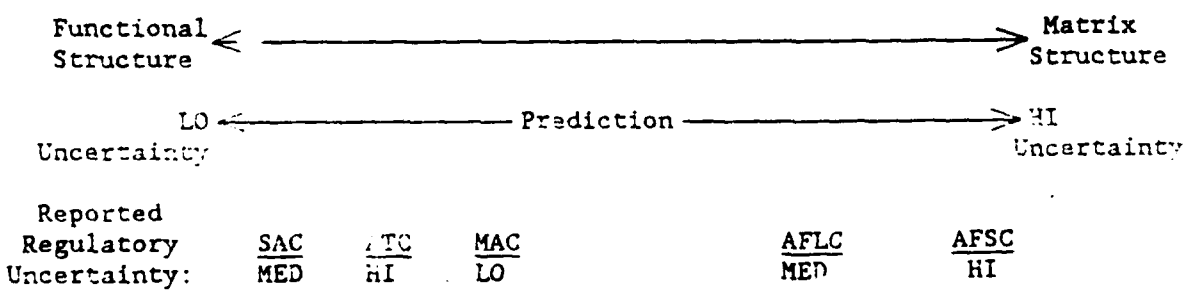
It is immediately apparent that the fit is not good between the structure in use and the degree of user sector uncertainty reported by commanders. The

"IT'S NOT SURPRISING. THE PRODUCTION DEPARTMENT IS IN SPAIN, THE WAREHOUSE IS IN KOREA, THE ACCOUNTING DIVISION IS IN BOLIVIA, THE BOARD OF DIRECTORS IS IN CANADA...."

biggest question may be, "Why does AFSC not experience greater perceived uncertainty from its users, who are the recipients of new weapon systems?" Likewise, AFLC might be expected to experience greater uncertainty with respect to the demand for logistics. One explanation is that the demand is rather stable and unchanging, hence uncertainty is low. Another explanation is that commanders in AFSC and AFLC are somewhat removed from direct pressure from users, and hence do not perceive uncertainty in the user sector. SAC and ATC both experience medium demands from the user sector, and MAC user uncertainty is high. MAC is in the business of providing rapid service to an array of customers, so perceived high uncertainty is logical. However, MAC needs structural characteristics to enable it to respond quickly to these changing demands. On the other hand, the more sophisticated matrix structures and lateral coordination in AFSC and AFLC are not needed if perceived environmental uncertainty is low.

The second sector of uncertainty for which data are available is the regulatory sector. This uncertainty is created by outside agencies that enforce rules and regulations that affect an organization. These include Air Force level regulations, federal codes such as OSHA and EPA, and even international trade agreements. Uncertainty in this sector arises from unpredictable changes in regulations and directives that affect the wing or deputate. The relationships between structure and perceived regulatory sector uncertainty are displayed below in Figure 10.

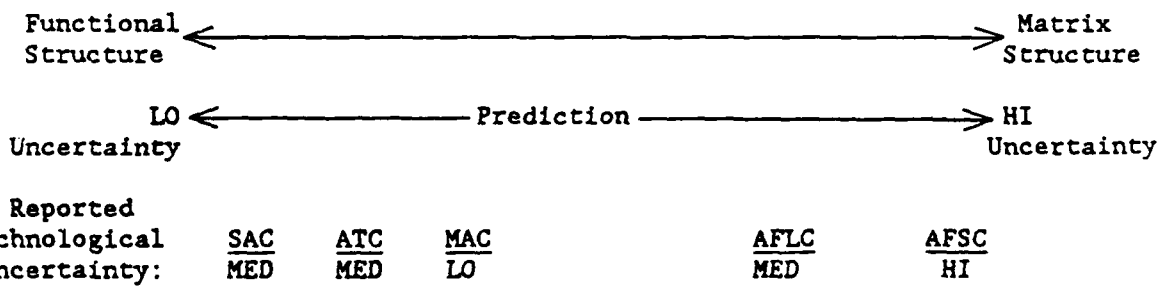
10. Regulatory Sector Uncertainty



The general fit between structure and perceived environmental uncertainty is better for this sector than it was for the user sector. SAC and MAC report medium and low uncertainty, and AFLC and AFSC report medium and high uncertainty. Generally, the matrix type structures in AFLC and AFSC are appropriate for higher environmental uncertainty. The incorrect pattern is represented by the high perceived uncertainty in ATC, for which a functional structure is not appropriate. However, these data may be skewed by one ATC base that was involved in major issues over environmental regulations on wastes. ATC bases also were subjected to a number of other regulations that were salient to commanders at the time of the interviews.

The third area of uncertainty comes from the technological sector. This sector includes changes in knowledge and techniques used to produce the organization's goods and services. Technology includes changes in weapon systems or diagnostic equipment. Uncertainty in this sector reflects unpredictability created by changes in equipment design or by the implementation of new technologies. The matrix structure is better suited to this type of uncertainty than is the functional structure. The relationships observed in the survey are illustrated below in Figure 11.

11. Technological Sector Uncertainty

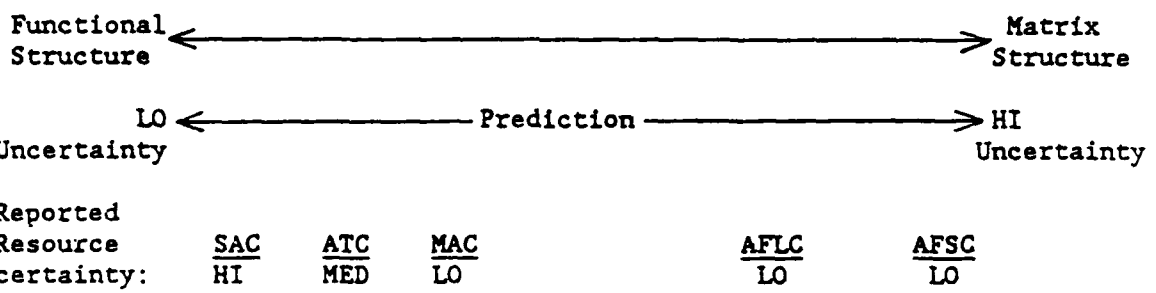


The relationship between technological uncertainty and structure, while not perfect, is certainly adequate. Commanders in AFLC and especially AFSC

see high technological uncertainty. AFSC also has a matrix structure which is appropriate for coping with technological uncertainty. SAC and ATC report medium uncertainty in the technological sector, and MAC reports low uncertainty, which can be handled by a functional structure.

The final environmental sector pertains to uncertainty about resources. The resource sector refers to the availability of manpower, dollars and supplies. Uncertainty in the resource sector indicates the inability to obtain resources, or the changing availability of resources so that commanders don't know what to expect. Once again, greater uncertainty in the resource sector is expected to be associated with matrix structures that provide more flexibility to accommodate resource uncertainty. The predictions and observed relationships are shown in Figure 12.

12. Resource Sector Uncertainty



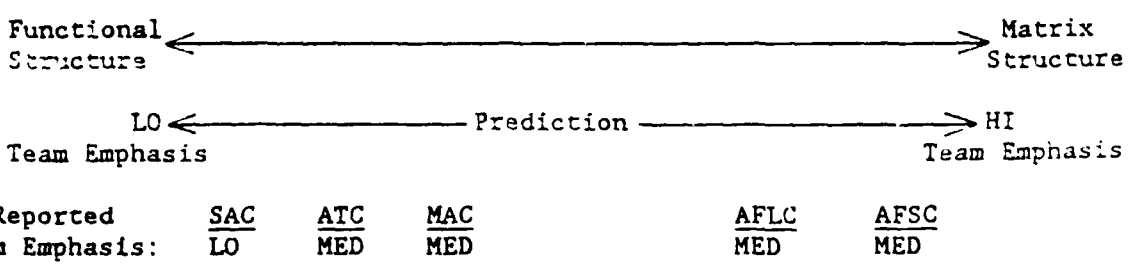
The relationships in Figure 12 are not what was predicted. There is disagreement between the structure in use and the amount of resource sector uncertainty reported by commanders. AFLC and AFSC report little experienced uncertainty concerning resources, almost as if they were buffered from resources and were assured of having whatever was necessary. By contrast, ATC experiences medium uncertainty and SAC experiences reported high uncertainty about resource availability. Generally, functional structures do not provide the adaptation necessary to cope with changing resource requirements, and the

matrix structure may not be needed to deal with low uncertainty in the resource sector of the environment.

Figures 9, 10, 11, and 12 report on four environmental sectors, and taken together the relationship between environmental uncertainty and structure is only moderately correct. The fit could be described as appropriate for the technological sector, and to some extent for the regulatory sector. But the structures do not seem designed to fit uncertainty in the resource and user sectors. AFLC and AFSC experience lower uncertainty than expected, and SAC and ATC experience higher than expected uncertainty in these sectors, based on the structures in use.

Human resources. The category of human resources includes the priority given to human resources by commanders in the various MAJCOMS. The focus of Figure 13 below is on the development of teamwork, which includes the efforts to create esprit de corps, and the concern for growth and development of workers. With respect to structure type, matrix structures typically are better suited for the development of human resources and organizational teamwork. Functional structures do not enhance worker development to the same extent because tasks are highly specialized, and workers have little opportunity to see the big picture. Thus the expected relationship is that organizations choosing matrix structures give higher emphasis to human relations than organizations using functional structures. The findings are illustrated below.

13. Human Resources



It seems clear that the human resource emphasis is not related to structural type. The strong emphasis expected in AFLC and AFSC is not present, although the lower human resource emphasis in SAC does fit the functional structure. The Figure 13 results do not mean that SAC places a low value on human resources, only that the emphasis on teamwork and personal growth is somewhat less.

Summary

Based on the selected findings presented in this chapter, an appropriate conclusion is that the structures used in the Air Force fit each organization's situation fairly well. This fit is reflected in the appropriate relationship among efficiency goals, innovation goals, vertical and lateral coordination, task routineness, and uncertainty in the technological and regulatory sectors of the environment. The lack of good fit is readily apparent in the relationship between structure and reported uncertainty in the user and resource sectors of the external environment. Organizations with lateral relationships and formal matrix structures--AFLC and AFSC--report low uncertainty in these sectors, while functional organizations--SAC, ATC, and MAC--report higher uncertainty in these sectors. It's not clear what these findings mean, but they may indicate that the respondents in AFSC and AFLC were assured of adequate resources and were buffered from immediate and changing demands from users, which was not the case in SAC, ATC, and MAC. The structures in AFLC and AFSC seem designed to fit production technology, goals, and to the technological sector of the external environment moreso than to fit users or resources.

VIII. STRUCTURAL APPLICATION TO MAINTENANCE ORGANIZATIONS

Maintenance organizations at Air Force wings provide an excellent illustration of structure concepts described earlier in this guide. The mission of all maintenance deputates is the same--to recover and repair aircraft in preparation for the next sortie. Although the mission is similar, there is an important variation in the formal structure of maintenance organizations. As of January, 1986, three major commands--MAC, TAC, ATC--utilized the functional form of structure specified by Air Force regulation 66-1 to organize maintenance. By contrast, maintenance deputates in TAC and USAFE utilized what could be called a self-sufficient or project-oriented structure prescribed by regulation 66-5. The theoretical approach to structure argues that each organization's structure should be designed to fit its mission, task, environment, and people. In this chapter we will explore whether these differences are associated with the utilization of 66-1 and 66-5 maintenance structures.

Description of 66-1 Structure

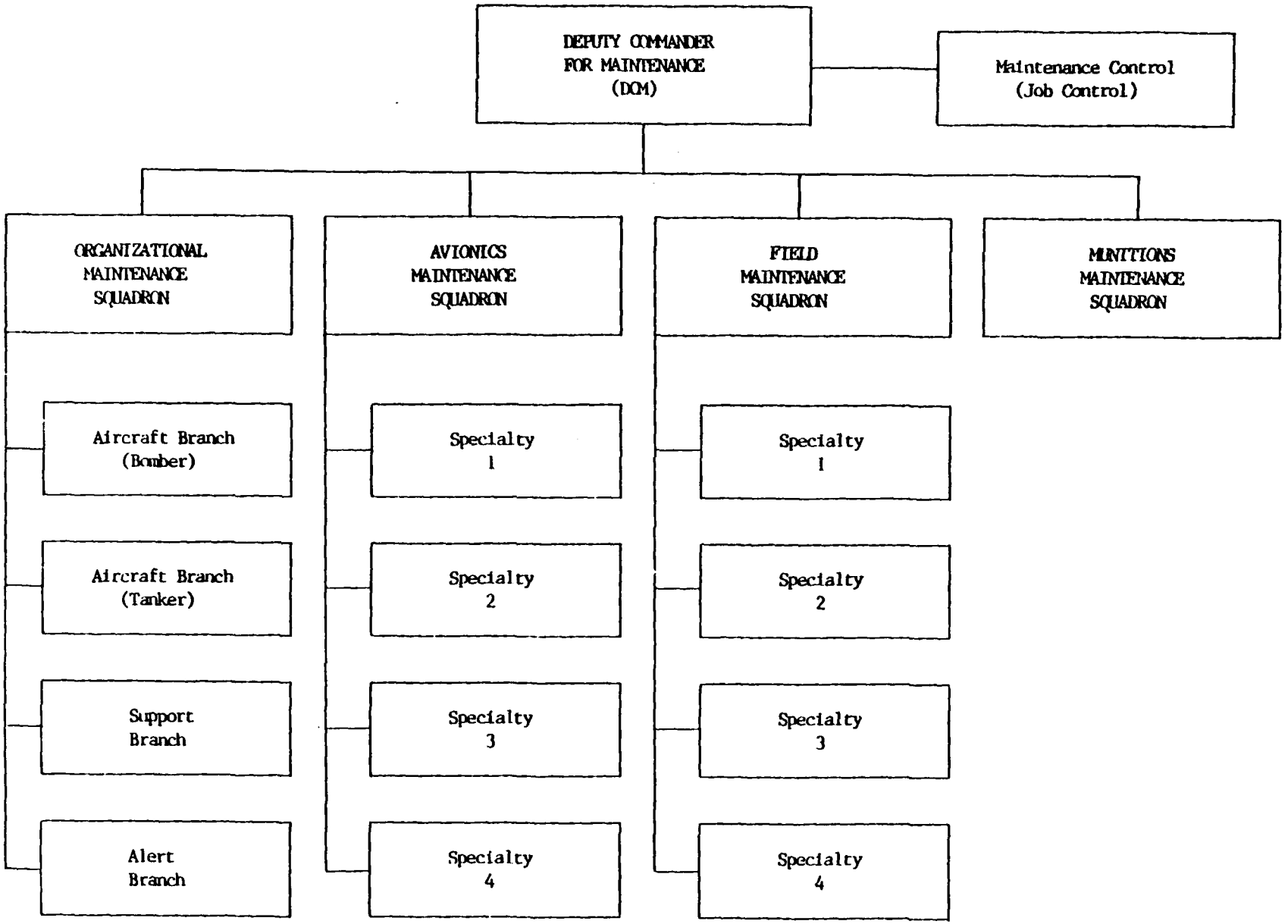
The typical organization chart for a maintenance deputate operating under AFR 66-1 is illustrated in Exhibit 21. The deputy commander for maintenance (DCM) reports directly to the Wing Commander. Squadron Commanders (four in

SAC, three in MAC, and two in ATC) report to the DCM. Squadron Commanders are in charge of a functional division, and each squadron is organized to perform a specific task with people who have a similar specialty. For example, the Organizational Maintenance Squadron (OMS) specializes in the recovery and turnaround of aircraft for launching. The Field Maintenance Squadron (FMS) specializes in the repair of airframes and engines. The Avionics Maintenance Squadron (AMS) specializes in the repair of electronic systems on the aircraft. Within each squadron, the structure is further subdivided into branches based on type of aircraft served (tanker or bomber), worker specialty (engine repair or sheet metal repair), activity (ground support or alert branch), or physical location (flight line or phase dock).

Exhibit 21 about here

A staff function called Maintenance (or Job) Control also reports to the DCM. This function is responsible for coordinating the activities of the maintenance squadrons. For example, when personnel in OMS detect that an aircraft requires nonroutine maintenance prior to the next sortie, they call maintenance control who coordinates the dispatching of specialists from FMS, AMS, or Munitions to make the repair. The term "coordinate" is important, because the basic function of job control is to coordinate but not to direct the activities of the maintenance squadrons. Personnel in each maintenance squadron report to the squadron commander, not to job control. Job control does the coordination for the deputate and places a premium on the cooperation between it and th maintenance squadrons.

Exhibit 21. A Typical 66-1 Maintenance Structure.



"In his mysterious way, God has given each of us different talents, Ridgeway. It just so happens that mine is intimidating people."

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Maintenance Deputates Under AFR 66-5

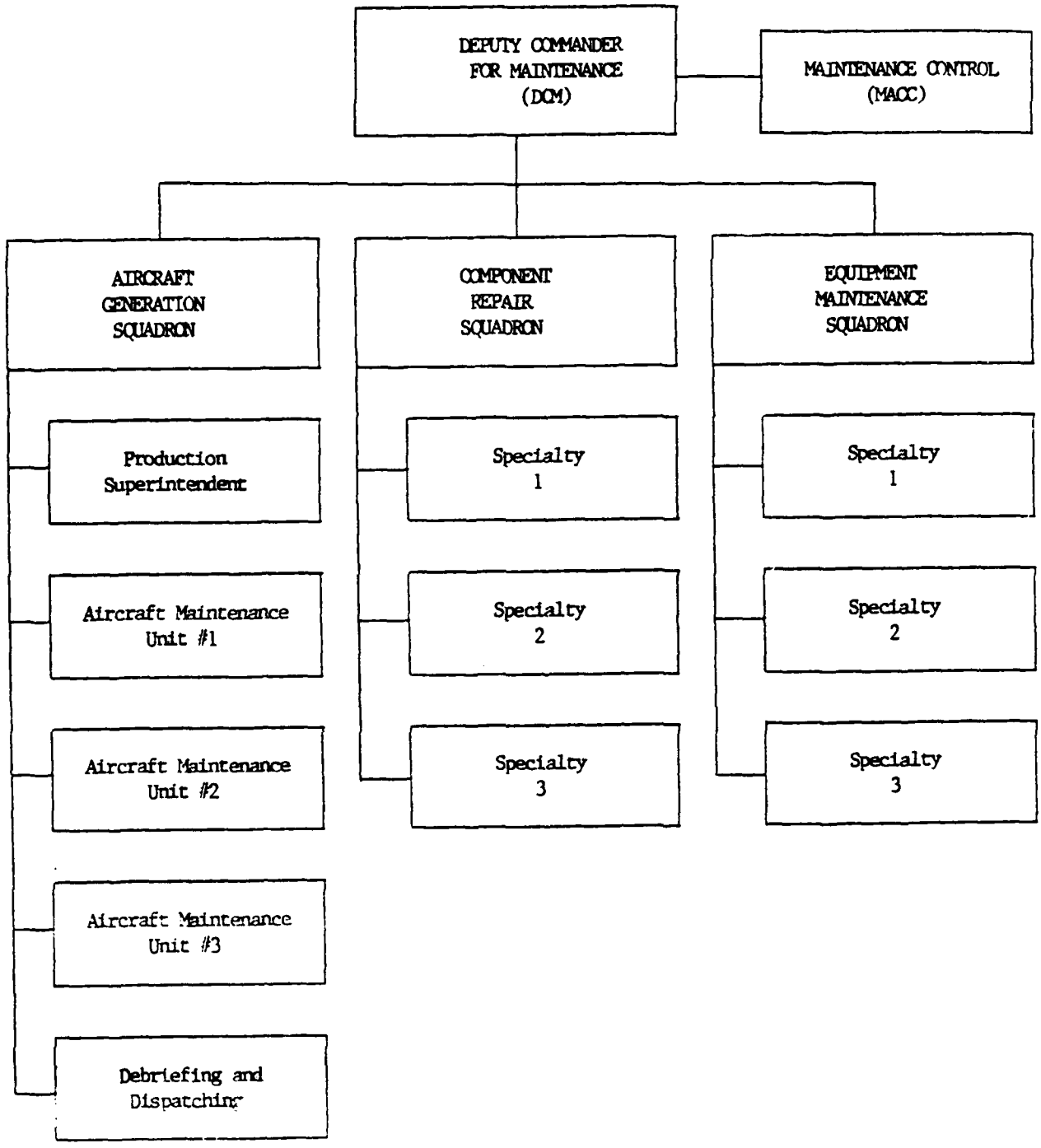
The typical structure of a maintenance deputate regulated by 66-5 is shown in Exhibit 22. The deputate is headed by the DCM, who reports to the wing commander, which is similar to 66-1. Under the DCM are three squadrons: Aircraft Generation (AGS), Component Repair (CRS), and Equipment Maintenance (EMS). CRS and EMS are organized based on functional specialties, which again is similar to 66-1. CRS represents the non-flight line work activities performed by avionics and field maintenance personnel in 66-1. CRS typically is subdivided into avionics, propulsion and accessory branches that perform shop repairs of systems. EMS is charged with the maintenance of ground equipment such as power supplies. This specialty is similar to FMS under 66-1.

Exhibit 22 about here

The major difference between 66-5 and 66-1 occurs in the function of AGS and the role of Maintenance Control (AMCC). The function of AGS is to recover and launch aircraft, and to coordinate and perform all routine and nonroutine maintenance that occurs on-board an aircraft. An AGS typically consists of branches called Aircraft Maintenance Units (AMU) that are associated with a particular group of aircraft. Each AMU is further divided into an aircraft flight, a specialist flight, and a weapons flight. The function of the aircraft flight is the recovery of aircraft and the routine preparation for launch. The specialist flight contains the personnel who perform avionics and field maintenance for the aircraft. The weapons flight contains munitions specialists.

An AMU thus contains all of the specialties necessary to completely

Exhibit 22. A Typical 66-5 Maintenance Structure.



maintain a flight of aircraft on the flight line. Unlike 66-1, all of the flight line specialists are in a self-sufficient unit that report to the same squadron commander. In this chain of command, the production superintendent, who also is in the AGS, coordinates and directs all activities on the flight line. Unlike the maintenance control function in 66-1, the production superintendent has the formal authority to direct activities on the flight line. Maintenance control under 66-5 serves only as a clearing house for information about the status of an aircraft. The production superintendent works directly from the flight line to coordinate necessary aircraft repairs. If a scheduled aircraft is not available for a sortie, the superintendent informs maintenance control personnel who then arrange for an alternative aircraft.

The 66-5 structure allows AGS to perform as a self-contained operating unit, thereby reducing the need for coordination and control across squadrons. The coordination between AGS and the other two squadrons in 66-5 structure is relatively simple and easy to manage. The complex coordination occurs within AMU's, where managers have the formal authority and the maintenance specialties to coordinate aircraft repair.

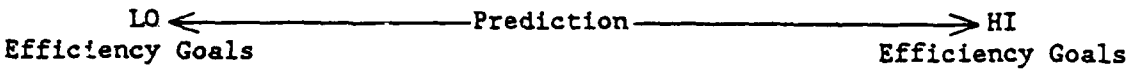
Comparing Organizational Situations of Maintenance Units

As part of the study of Air Force structures described in the previous chapter, DCM's and squadron commanders in maintenance deputates were interviewed. The data obtained from these interviews provide an opportunity to see whether the 66-1 and 66-5 structures fit the organizational situation. The 66-1 structure is essentially a functional structure, and would be most appropriate for efficiency goals, routine technologies, and vertical coordination. The 66-5 structure is similar to a self-sufficient unit, which

is appropriate for goals of innovation or rapid adaptation, horizontal coordination, nonroutine tasks, and an emphasis on human relations and team building.

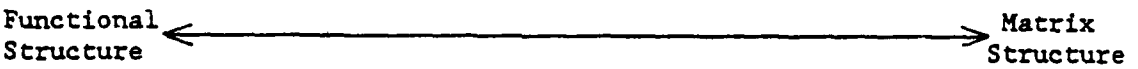
Operating goals. The operating goals with respect to the priorities given to efficiency and adaptability are reported in Figures 1 and 2 below. Functional structures are designed for efficiency, and project structures are designed primarily for adaptability, although efficiency may also be important.

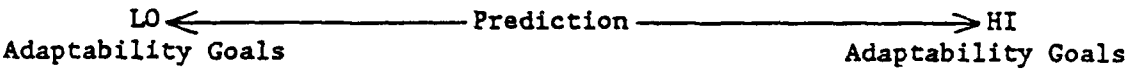
1. Efficiency Goals



Reported Efficiency Goals:	SAC	ATC	MAC	USAFE	TAC
	MED	HI	MED	HI	LO

2. Adaptability Goals





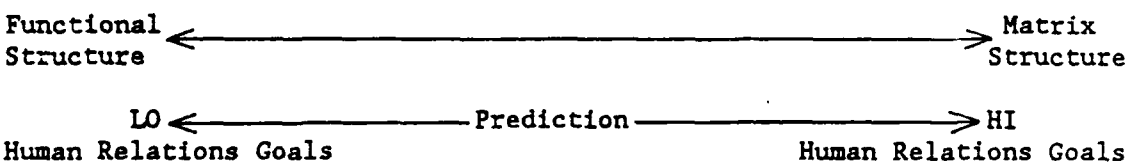
Reported Adaptability Goals:	SAC	ATC	MAC	USAFE	TAC
	MED	LO	HI	HI	LO

The results for the efficiency goals are consistent with the theory. The MAJCOM's using the functional structure--SAC, ATC, MAC--were all reasonably high on efficiency goals. However, of the MAJCOM's using self-sufficient structures, TAC reported that efficiency was a low priority goal and USAFE reported that efficiency was high priority. USAFE's concern for efficiency might be explained by the limitations on manpower and the relatively more difficult supply problems found in overseas bases.

The findings for adaptability goals in Figure 2 above are not entirely consistent with theoretical predictions. The functional structure is considered appropriate for a goal of stability, and the self-sufficient structure has better mobility and a quick response because it is easier to move small, self-contained units than to assemble a mobile unit from several functional squadrons. The self-sufficient structure is associated with a higher adaptability goal for USAFE, but not for TAC. MAC also has a high adaptability goal, probably because of the diverse demands of customers. The low rating for adaptability goal in TAC is not consistent with the predicted use of the self-sufficient structure.

One reason for the lower emphasis given to adaptability goal in TAC may be the high priority given to human relations. Human relations pertains to the concern for team building and for the personal growth and development of personnel. A human relations goal can be an outgrowth of leadership and the cultural value placed on team building and cooperation. Note in Figure 3 below that TAC rates high on human relations emphasis.

3. Human Relations Goals



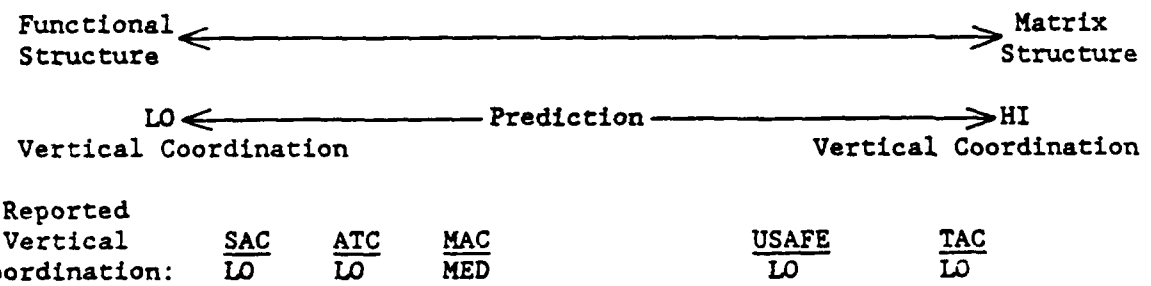
Reported Human Relations Goals:	SAC	ATC	MAC	USAFE	TAC
	LO	MED	LO	MED	HI

TAC rates highest on human relations goals and USAFE rates medium. SAC and MAC both rate low, all of which are consistent with the theoretical predictions. The high priority given to human relations may reduce to some extent the priority given to adaptability and efficiency within TAC. The data

were collected in a way that asked managers to rank goals. When General Creech took over TAC, human relations became a new priority as a part of his leadership. The high emphasis given to human relations to accomplish TAC's mission still exists today. A human relations emphasis seems to be a part of TAC's corporate culture.

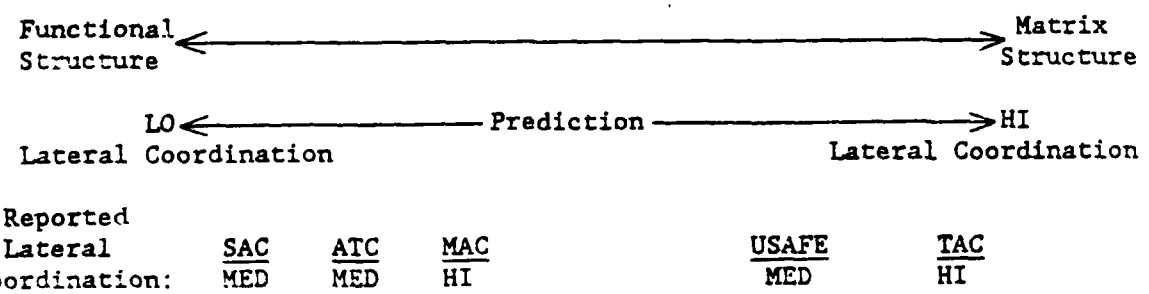
Vertical and horizontal coordination. The theory predicts that functional structures use vertical coordination, but that variations such as horizontal teams, task forces and self-sufficient units rely more heavily on horizontal coordination. Thus, self-sufficient squadrons are expected to use less vertical coordination than squadrons with functional structures. This prediction is illustrated in Figures 4 and 5 below.

4. Vertical Coordination



Reported Vertical Coordination:	SAC	ATC	MAC	USAFE	TAC
	LO	LO	MED	LO	LO

5. Lateral Coordination



Reported Lateral Coordination:	SAC	ATC	MAC	USAFE	TAC
	MED	MED	HI	MED	HI

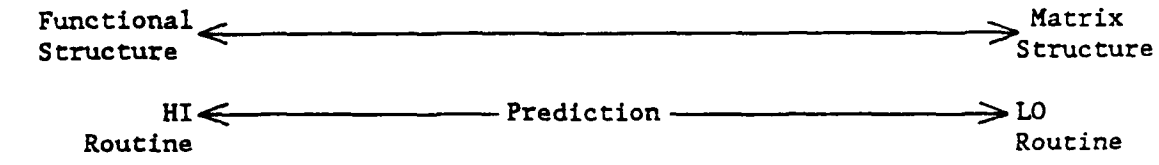
The findings in Figure 4 suggest that maintenance units in most commands make low use of direct vertical coordination. SAC and ATC both report low

vertical coordination, and so do USAFE and TAC. MAC reports medium use of vertical control devices. These results are as expected for USAFE and TAC, and a higher amount of vertical coordination might be expected for the functional structures in SAC and ATC.

One explanation for the relative absence of vertical control from all maintenance is the high level of reported lateral coordination in Figure 5. SAC and ATC both report medium lateral coordination, and MAC reports a high level of lateral coordination. Likewise, TAC reports the high use of lateral coordination. USAFE reports a medium level. All of the organizations seem to make greater use of lateral coordination devices than vertical coordination for the day-to-day coordination of activities across squadrons. Face-to-face information and discussion flow laterally more than vertically to coordinate maintenance activities.

Production technology. Production technology pertains to whether maintenance tasks are routine or nonroutine. Routine tasks are low in variety, and often involve the repetition of well understood activities. Nonroutine tasks are characterized by high variety as in project work. According to the theory, nonroutine tasks are more appropriate for self-sufficient structures, and routine tasks are more appropriate for functional structures. The findings pertaining to maintenance deputates are in Figure 6.

6. Routine Technology

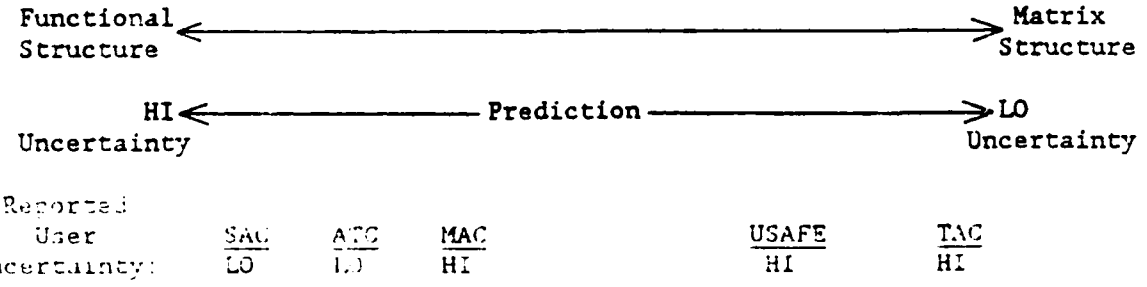


Reported Routine Technology:	SAC	ATC	MAC	USAFE	TAC
	MED	HI	HI	MED	MED

The prediction that functional structures would be used when tasks are routine is upheld. Both ATC and MAC report routine production technologies. USAFE and TAC report that task routineness is only medium, which is appropriate for a self-sufficient structure. SAC is the only exception to the data, and SAC's production technology tends to resemble TAC and USAFE more than MAC and ATC. The differences may reflect the relative complexity of the aircraft and systems that are maintained by each MAJCOM, with SAC, USAFE, and TAC having more complex systems to deal with tasks are reported as less routine.

External environment. The external environment pertains to those events and organizations outside the maintenance deputate. The external environment, as indicated in the previous chapter, can be analyzed with respect to user sector, resource sector, technological sector, and regulatory sector. The data below describe three of these sectors--user, resource, and technology. The prediction is that high uncertainty, especially in the user sector, is associated with self-sufficient structure because the structure enables personnel to be mobilized at short notice. Functional structures are appropriate when user uncertainty is low and the organization performs its regular task. The relationship between user uncertainty and structure is illustrated in Figure 7.

7. User Sector Uncertainty



The relationship between structure and user uncertainty is almost perfect. TAC and USAFE report high levels of user uncertainty, and both are structured into self-sufficient units. The self-sufficient structure is designed around outputs, and the desire to provide highly flexible outputs as necessary. SAC and ATC both experience low user uncertainty, and both are structured in a functional manner. The only exception is MAC, which experiences frequent changes in demand for its services, although it is structured into a functional organization.

Environmental uncertainty in two other sectors--technology and resources--are shown in Figures 8 and 9 below.

8. Technological Sector Uncertainty

Functional Structure ⟷ Matrix Structure

HI Uncertainty ⟷ Prediction ⟷ LO Uncertainty

Reported Technological Uncertainty:	SAC	ATC	MAC	USAFE	TAC
	HI	LO	MED	HI	LO

9. Resource Sector Uncertainty

Functional Structure ⟷ Matrix Structure

HI Uncertainty ⟷ Prediction ⟷ LO Uncertainty

Reported Resource Uncertainty:	SAC	ATC	MAC	USAFE	TAC
	HI	MED	MED	HI	LO

The findings for the technology sector don't quite conform to the theory. High technological uncertainty is reported for SAC and USAFE, medium uncertainty for MAC, and low technology uncertainty for ATC and TAC. The

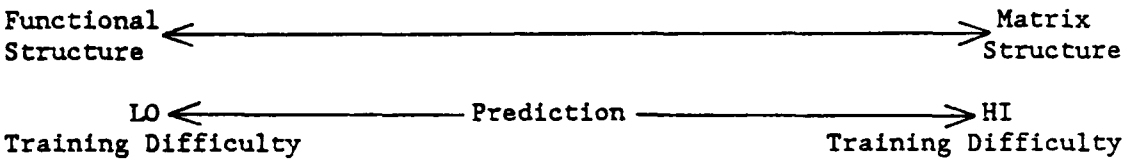
self-sufficient unit is not suited for reduction of technological uncertainty. The introduction of a large new weapon system in SAC for example, would create great uncertainty but would not necessarily require a self-sufficient structure. This may explain why high perceived technology uncertainty occurs for a functional structure and for a self-sufficient structure. The major issue facing TAC is user uncertainty, not technological uncertainty.

A similar finding occurs for the resource supply sector. SAC experiences high resource uncertainty, and so does USAFE. MAC experiences medium uncertainty, as does ATC. TAC, however, experiences low uncertainty about resource supplies. TAC's low uncertainty in the supply sector may be partially explained by the policy of having supplies available on the flight line. Maintenance squadrons in other MAJCOM's report medium to high uncertainty with respect to the supply of necessary resources. This uncertainty is unrelated to structure. Thus the strongest and most important relationship between structure and environmental uncertainty pertains to the user sector, and whether the organization is designed to respond to needs of customers.

Human resources. The final data pertain to the human resources in maintenance organizations. Recall from Figure 3 earlier in this chapter that human relations were given high priority within TAC. The corporate culture in TAC emphasizes team development and cooperation, which are appropriate for a self-sufficient structure. However, a self-sufficient structure can create other kinds of human resource problems. The organization structure should enable training of workers. Training opportunities normally are scarce in a self-sufficient structure, because groups are smaller and there is less opportunity to develop specialization and expertise. In a functional structure all specialists are grouped together into a single branch, and there

are more opportunities for on the job training and exposure to interesting problems. The functional structure is associated with better training opportunities than the self-sufficient structure for human resources. Or to put it another way, difficulty of training is greater in self-sufficient structures where people perform a wider range of tasks and are less able to specialize. The findings are reported in Figure 10.

10. Training Difficulty



Reported Training Difficulty:	SAC	ATC	MAC	USAFE	TAC
	MED	LO	HI	MED	HI

With the exception of MAC, the results in Figure 10 correspond to the predictions. TAC reports the greatest difficulty in getting workers trained. SAC and ATC report medium to low difficulty under the functional structure. The problem in MAC may result in part from a combination of insufficient staffing and a high workload that make on-the-job training difficult.

In summary, this chapter has reviewed organizational characteristics associated with the use of functional and self-sufficient structures in maintenance organizations. The functional structure is represented by AFR 66-1 as used in SAC, ATC, and MAC. The self-sufficient structure is represented by AFR 66-5 as used in USAFE and TAC. These structures fit rather well the organizational situations. The functional structure (66-1) was used in situations characterized by efficiency goals, routine production technology, a certain user sector in the environment, less emphasis on human relations, and better training opportunities. The self-sufficient structure

was associated with heavy emphasis on human relations, high uncertainty in the user sector, nonroutine production technologies, greater horizontal coordination, and more difficulty training workers. With respect to environmental uncertainty in the technological and resource supply sectors, the findings did not fit the theory very well, and the same was true for the goal of adaptability. The relationships between structure and situation need additional study to learn whether selective modifications may be needed for some maintenance organizations to fit the goals, environment, and human resource constraints.

IX. REORGANIZING: WHEN AND HOW

Two problems of organizing that may confront managers in the Air Force are the need to create a new organization, and the need to restructure an established organization. When a new weapon system is brought into the Air Force inventory, a new organization is created to manage and direct the activities that enable the weapon system to be operational. The specific structure suited to the new weapon system will be different from established organizations. The ground launch cruise missile (GLCM) system in Europe is a new weapon that required a new organization. A new structure also is needed when current organization units are reorganized or combined into a new organization. This occurred when ISS was created by combining the old communications organization with the newer computer organization. The development of the space command also brought together parts of previous organizations. In the case of combining existing units some managers within the units will have experience with tasks and can be a resource for ideas on how to design the new organization.

The two situations requiring reorganization thus are: (1) organizational redesign wherein the organization is reorganized or created from parts of established organizations, and (2) creating a new organization from scratch without any previous operating experience. Both of these situations are

We trained hard—but it seemed that every time we were beginning to form up into teams we would be reorganized...we tend to meet any new situation by reorganizing, and a wonderful method it can be for creating the illusion of progress while producing confusion, inefficiency, and demoralization.

Petronius, 210 B.C.

Indeed, the problem is not new.

difficult for managers to handle. They require special attention from top management. Since the two situations are resolved in somewhat different ways, guidelines for each are provided in this chapter.

Reorganizing to Correct Structural Problems

The first step for a reorganized unit is to create a new organization chart, but that does not end the problem. For example, combining old units into a new organization seems easy enough, but a new setting and relationships will create unusual decision making situations for managers, and will increase ambiguity about decision making responsibility. New or shifting roles can produce confusion. Reaction time to problems can be slowed. Conflict may be increased and morale lowered. These problems can arise as managers experiment with working relationships in a reorganized unit.

One approach to structural clarification is called the Organizational Responsibility Guide (ORG). Development of the ORG was sparked by linear responsibility charting used to relate management positions, functions, and decision responsibility to each other. The importance of the ORG is that it actively involves members of the work group in defining their roles and responsibility relationships. Participants must have working experience in the organization. The procedure for developing the Organizational Responsibility Guide requires active participation from the management group, otherwise there is no opportunity to define actual working relationships or to resolve differences and improve communication.

RULES OF THUMB: The steps involved in developing the ORG are as follows:

Step 1. Define task activities.

Step 2. Define management actors.

Step 3. Define relationships.

Step 4. Participant balloting and tabulation.

Step 5. *Diagnosis and feedback.*

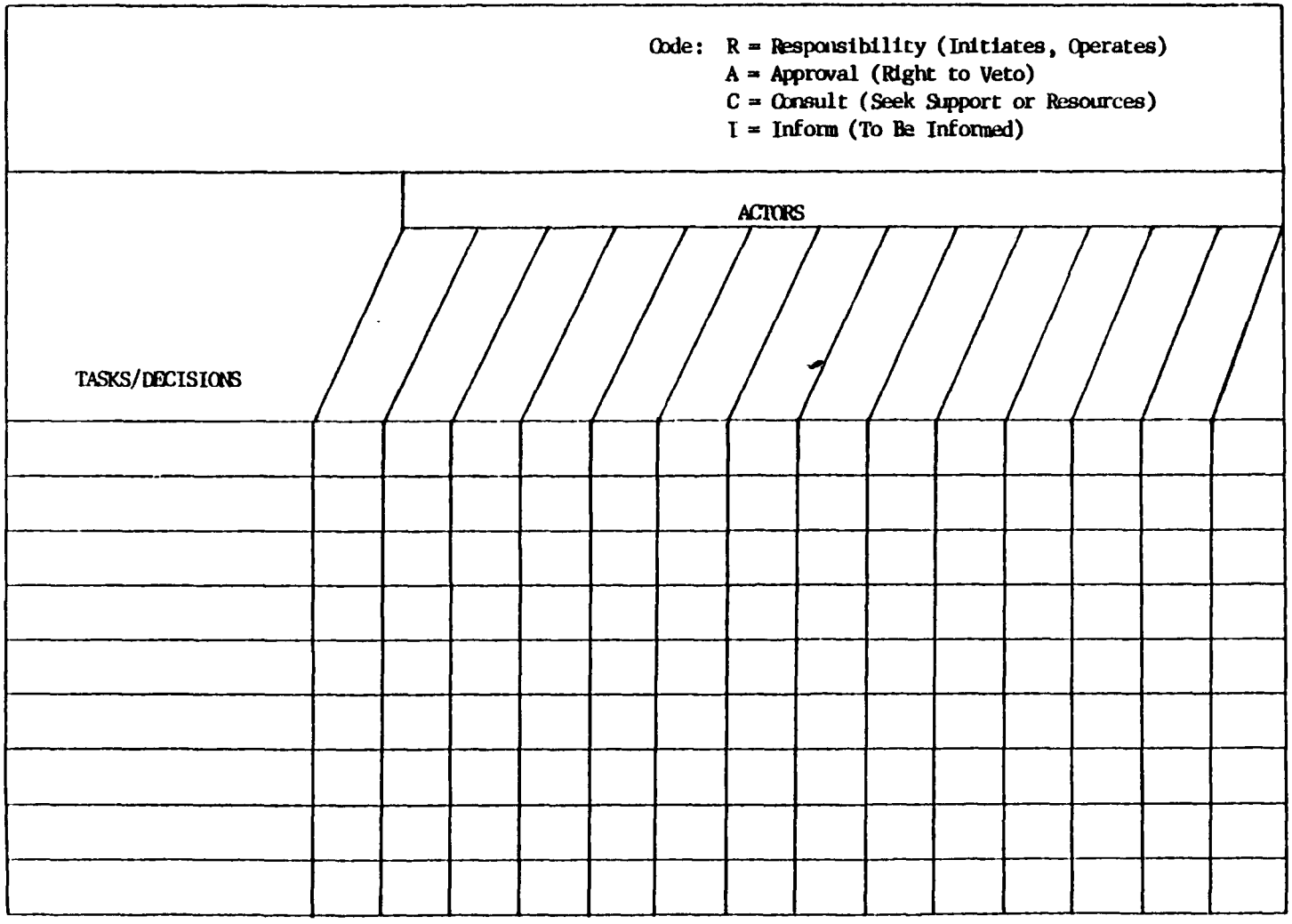
The ORG procedure requires a chart similar to Exhibit 23. We will briefly explain each step in the procedure and give examples of how each can be performed.

Exhibit 23 about here

Step 1. Define task/decision problems. The first step is to reach a concise definition of structural problem areas. Problems may include clouded responsibility for specific tasks or decisions. This step focuses on the needs of the organization. It can be used to define problems about departmental tasks that cause confusion in the organization, or specific decisions for which the decision responsibility is not clear. This step seems simple but can be frustrating unless participants know what they want. If they want to focus the exercise on a specific decision area, then the problem list must reflect those decisions. Each decision or task must be described in objective terms that are clear and unambiguous.

The best way to proceed is to bring participants together in a group and ask them to develop a list of problem tasks or decisions about which confusion exists. One procedure is to interview each participant prior to the group discussion. Another procedure is to ask members to write down problem areas during the initial part of the discussion. Each individual may list up to ten problems of ambiguous task or decision responsibility. Among respondents there is normally overlap, and it is not unusual to have group consensus on from ten to thirty problems. Thirty problems is too many to handle in one session, but these can be divided into three lists of ten each.

Exhibit 23. Organizational Responsibility Guide.



In one organization, examples of tasks for members said which decision responsibility was unclear are as follows:

1. Organization-wide budget revisions in response to revised budget allocation from Congress.

2. Training program to improve standardization of financial reports from divisions.

3. Union negotiations.

4. Refunds to customers for large item of machinery.

5. Creation of a new building and its training center.

These five tasks were identified as being unclear and problematic for the organization. The list of tasks should be summarized in the left hand column of the ORG chart similar to Exhibit 23. The five tasks are defined at a rather general level because participants wish to assess who has responsibility for each.

Step 2: Defining management actors. The set of actors involved in any task or decision depends upon the problem to be solved. If the Organizational Responsibility Guide is undertaken to achieve mutual understanding among a set of managers, then those managers should be involved. Any other managers that are relevant to the list of problem areas should also be included in the meeting. Managers who are presumed to have direct responsibility for the tasks as well as managers who either have indirect responsibility or with whom coordination is important should be involved. If the list is too long, brainstorming among participants can quickly define the actors most relevant for each task. Actors normally appear on the current organization chart. A set of actors and problem areas defined for an aerospace company are listed in Exhibit 24. Actors range from the vice president of the aerospace division to the manager of each major department.

Exhibit 24 about here

Step 3: Define relationships. Participants must develop a common vocabulary to describe the relationships relevant to each task or decision. Although there are many relationships that could be developed for a specific organization, the following four definitions meet the communication and responsibility requirements of most organizations. This list can be increased if necessary to meet the needs of a unique organization.

R-Responsibility: The individual has direct operating responsibility for the execution of the task. This person develops the alternatives, analyzes the situation, takes the initiative for task accomplishment, assures consultation with others, and makes recommendations.

A-Approval: This person must approve or veto any major action concerning the task. This individual has general responsibility to guide and direct the task activity, and must sign off on decisions recommended by the R role.

C-Consult/Coordinate: This person is to be consulted before any decision is made. This person provides resources, renders advice or relays information. This person must be involved but has no veto power.

I-Inform: This person must be notified of any task action that has been taken. This person must be kept

Exhibit 24. Organizational Responsibility Guide for Aerospace Company.

TASK/DECISION	MANAGEMENT POSITIONS: Vice President Aerospace	Vice President Manufacturing	Director Engineering	Manager Ind'l. Technology	Manager Quality Assurance	Manager Master Scheduling	Manager Financial Services				RELATIONSHIP CODE
1. Perform division budgeting and financial planning activities, handle budget changes.											R RESPONSIBILITY
2. Design new, and improve existing, electronic aerospace products.											A APPROVAL
3. Develop project schedules, coordinate, control and report on project status.											C CONSULT
4. Establish quality assurance policies, procedures and controls.											I INFORM
5. Obtain material and tools; manufacture products to quantity, quality, and cost requirements.											
6. Develop proprietary products using proven technology adapted to industrial uses.											

informed, but need not be consulted before the decision and has no veto power.

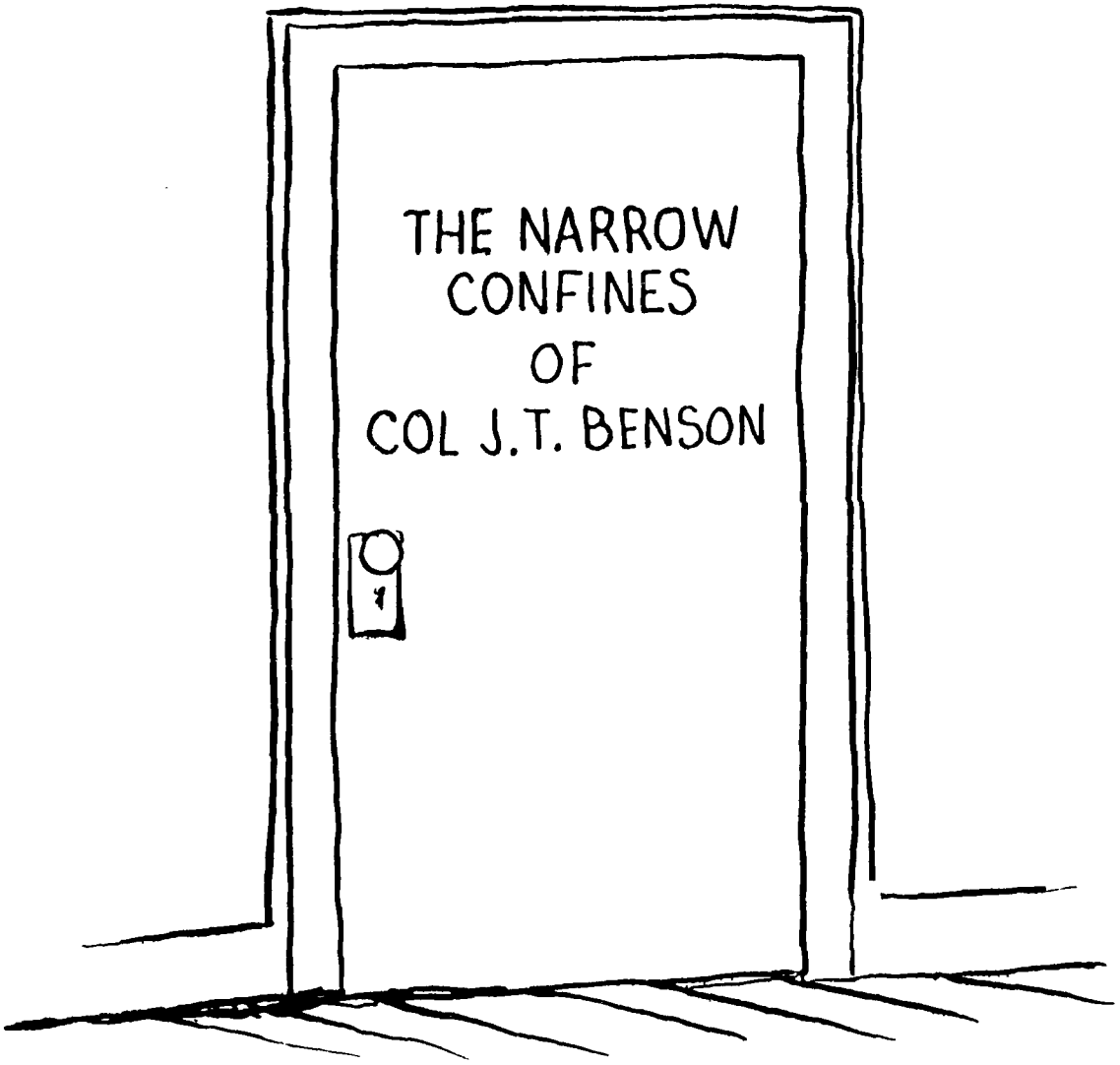
These four relationships can be used to describe how the organization's functions and positions relate to each other. This is where the Organizational Responsibility Guide makes its contribution.

Step 4: Participant balloting and tabulation. The respondents should be the managers listed on the ORG, but can also include other managers who have working knowledge of the relevant tasks. Each participant is given a copy of the ORG--Exhibit 24 for example--and then individually and confidentially assigns one of the four relationships to each of the actors for each of the tasks on the matrix. A participant should work horizontally across the set of actors for each task until all tasks are completed.

The next step is to tabulate responses. The tabulation works best and provides a richer learning experience when a group discussion is used. Having the scores tabulated without discussion deprives participants of the spontaneous comments and questions that lead to better understanding of task and decision responsibilities.

If the number of actors is too great to use a group discussion, a survey format can be used. The survey generates a large amount of data and the validity of the data is questionable since discussion and consensus about types of responsibility does not occur. The survey method should only be used in conjunction with a detailed explanation of the overall process, including task definitions and definitions of each type of relationship.

Tabulation during a group discussion is usually accomplished by asking how many participants gave a particular actor an "R," for example, for a specific task. The group responds with a show of hands. The tabulation continues for each type of responsibility for each decision until data from



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all participants are included in each matrix cell. The response aggregation is quick, it reveals patterns clearly, and it can generate discussion by revealing where disagreement exist. Exhibit 25 illustrates the responses for twenty group participants.

Step 5: Diagnosis and feedback. Diagnosis of the tabulated results can involve four types of analysis: cell analysis, role comparisons, vertical analysis, horizontal analysis, and is/ought analysis.

Cell analysis reveals the amount of agreement among participants about a manager's task/decision responsibility. For example, in row 1 of Exhibit 25, fourteen individuals wanted to obtain approval (A) from the Vice President-Aerospace for specific budget changes. This was inconsistent with the stated desire of headquarters to decentralize this decision. As a result, approval of the vice president is no longer sought. The vice president is informed (I) but the manager of financial services has authority to approve (A) budget changes. With respect to the Vice President of Manufacturing and the Director of Engineering, the analysis and discussion dramatically clarified their budget roles. For the Vice President of Manufacturing, the group was divided between approval (9 votes) and consult (7 votes) roles. For the Director of Engineering, the split was between operating responsibility (5 votes) and consult (10 votes). The group discussion resulted in defining the Vice President Manufacturing responsibility to "approve" budget changes in his area, and the Director of Engineering is to be "consulted" on budget changes that affect his area.

Exhibit 25 about here

Role comparison examines the responses of a single participant about that

Exhibit 25. Organization Responsibility Guide with Tabulated Responses.

TASK/DECISION	Code	MANAGEMENT POSITION: Vice President Aerospace	Vice President Manufacturing	Director Engineering	Manager Ind'l. Technology	Manager Quality Assurance	Manager Master Scheduling	Manager Financial Services	DIAGNOSIS
1. Perform division budgeting and financial planning activities, handle budget changes.	R	1	3	5	0	0	0	18	Vice President not decentralizing.
	A	14	9	4	4	4	2	2	
	C	4	7	10	12	3	17	0	
	I	1	1	1	4	13	1	0	
3. Develop project schedules, coordinate, control and report on project status.	R	0	1	0	0	0	20	0	Large amount of consulting—set up task force?
	A	18	1	0	0	0	0	1	
	C	2	12	13	5	8	0	5	
	I	0	6	7	6	8	0	6	
6. Develop proprietary products using proven technology adapted to industrial uses.	R	0	0	12	10	0	0	0	Confounded responsibility between Engineering and Industrial Technology.
	A	11	1	7	8	0	1	0	
	C	5	12	1	2	7	6	4	
	I	4	7	0	0	5	3	12	

Source: Based on Robert Melcher, "Roles and Relationships: Clarifying the Manager's Job," Personnel (May-June, 1967), pp. 33-41.

participant's own role in a task compared with the responses of other managers about that task. If a major split exists between the perceptions of the role incumbent and other managers concerning that role, then conflict and ambiguity exist. Perhaps the vice president wants the president to have an "inform" role, while the president wants to have an "approval" role. Most tabulations will reveal that role incumbents and other managers do not agree with expected relationships. By identifying the incumbent role responses separately, this discussion can lead to a new understanding.

Vertical analysis examines the pattern of responses of each actor for the set of tasks. Vertical analysis looks at responses in the entire column for a single position and can reveal the location of relatively weak or powerful positions in the organization. It can also reveal actors with high ambiguity concerning their task responsibility. For example, if there are many R's in a column, the actor may have too large an operational role, and other managers may question whether this is desirable or even feasible. Some responsibility may need to be delegated. No Rs or As means that the actor may have a weak role that can be enlarged or eliminated. Many Cs indicate the actor is a key resource for information, resources, and coordination. The department is interdependent with other departments and the organization must provide adequate collaboration. Perhaps a liaison role, team, or task force is warranted to ensure coordination across departments.

Horizontal analysis examines the pattern of responses across all actors for a specific task. Horizontal analysis reveals the distribution of relationships among actors. It reveals low consensus roles, poor coordination, and gaps in communication. Poor coordination could result from confusion about the location of operating responsibility, approval, and consulting roles. No Rs for a task means the job may not get done because no

one owns the task. If there are multiple Rs for the task, then conflict may exist about which manager has primary responsibility. Multiple people with approval responsibility tend to diminish accountability. If several managers must approve a decision, the blame can be easily shifted. Multiple consults mean there is a large cost for communication and coordination. If all consultation is necessary, the organization can establish formal coordination mechanisms. If consultation is not needed, decision making and task activities can be streamlined.

The final type of diagnosis results from is/ought analysis. By having individuals complete the matrix twice, once for how things "actually are" and once for how they "should be," a comparison between current and desired roles can be made for each task. This analysis reveals when people want to change their own role or when they feel that task responsibilities should be different. This kind of comparison signals organizational distress--people feel dissatisfaction with roles and wish to renegotiate them. The analysis of differences between what actors see as current responsibilities and what they think responsibilities should be can provide an important source of information for how the structure and reporting relationship should be changed.

Feedback about the analyses should be done in the group setting. This approach has the advantage of getting full participation and involvement of each actor. Members of the group can present their views, and more often than not participants will resolve differences among themselves without resorting to formal authority. Using a group format to provide feedback is highly educational; it gives each member of the group a better understanding of task responsibility and communications that must take place for the organization to perform effectively. Exhibit 26 shows how the chart might appear after divergent views have been reconciled. Individuals have a clearly defined

mutual understanding concerning their working relationships. For example, the need for many departments to be consulted for item six concerning new product innovation lead to the creation of new product teams. The new product teams facilitated communication and coordination to ensure that perspectives of all departments are considered in new product decisions.

One final note. Group discussion and feedback is needed to develop consensus about structural changes. Since the fine tuning of organization structure is a complex task, both a high quality solution and a solution that is acceptable to managers is important. Moreover, once the feedback and discussion starts, it is important to move quickly. Organization structure decisions affect every position in the organization. The possibility of changing organization structure can create rumors and uncertainty. People will hear rumors, hence it is important to make decisions and announce the results widely so that rumors will be dealt with directly and positively.

Exhibit 26 about here

Creating a New Organization

The availability of organization charts for every kind of organization in the Air Force can mislead managers about creating a new organization. It is easy to believe that drawing a wiring diagram is a clearly defined task that merely requires taking information from manuals and regulations already on the shelf. This approach to a new organization assumes that a well-defined body of knowledge exists about departmental tasks, relationships among departments, and the mission of the new organization. The organization chart and reporting relationships can be calculated in a systematic manner.

Exhibit 26. Responsibility Definition after Group Discussion.

TASK/DECISION	Code	MANAGEMENT POSITION: Vice President-Aerospace	Vice President Manufacturing	Director Engineering	Manager Ind'l. Technology	Manager Quality Assurance	Manager Master Scheduling	Manager Financial Services
1. Perform division budgeting and financial planning activities, handle budget changes.	R A C I	A	A	C	C	I	C	R
2. Develop project schedules, coordinate, control and report on project status.	R A C I	A	C	C	C	C	R	I
3. Develop proprietary products using proven technology adapted to industrial uses.	R A C I	A	C	A	R	I	I	I

In fact, creating a structure for new organizations is ill-defined and poorly understood. The process of defining the new structure requires the use of opinion and subjective information. Someone has to define critical tasks and interrelationships. Little analytical understanding of the organization exists. Indeed, people may be in disagreement about relevant tasks, the intended mission, and the appropriate design for the organization. Designers of the organization must cope with subjective information, little knowledge, and disagreement. The problem is similar to developing a five-year plan for a business organization. It is extremely difficult to define the organization or the environment five years into the future. Planners have many opinions and few facts. Yet defining the future with a five-year plan can help the organization immensely. In much the same way, defining the organization structure for a weapon system that does not yet exist can enable the organization to more quickly become operational, even if the structure is not correct in all respects.

RULES OF THUMB: The steps to use to design a new organization from scratch are as follows:

Step 1. Develop qualitative understanding.

Step 2. Define overall task scope and mission.

Step 3. Define required subtasks.

Step 4. Look for prototypes.

Step 5. Design and implement the organization.

Step 6. Adopt a trial and error attitude.

Step 7. Fine tune the structure.

The procedures involved in each step will now be described.

1. Develop qualitative understanding. Qualitative understanding means learning about the organization from direct experience rather than from second

hand, "textbook" experience. Qualitative understanding can be achieved through two approaches. First, use a team to design the new organization rather than a single individual. The team can bring together a wider experience base, a greater range of ideas for design alternatives, and it can provide a forum for surfacing problems and resolving disagreements. Designing a new organization is an ambiguous task. Ambiguity and uncertainty can be resolved through group discussion that gradually resolves unclear issues. Second, the group should allocate time to "pilot exploration" that will acquaint team members with characteristics of the proposed organization as well as with basic organizing concepts. A clear understanding of qualitative dimensions of the proposed organization means that team members must communicate with people who have been associated with the proposed organization. Team members should interview people involved in the design of the weapon system, people who have experience managing similar weapon systems, experts in the mission and technology, and perhaps people who are familiar with the region in which the organization is to be located. Opinions and judgments from a wide variety of people provide the preliminary understanding necessary to move ahead with the definition and design of organization structure.

2. Define overall task scope and mission. Knowledge from the pilot exploration and from the experience of group members can be used to define the overall task and the operational goals of the organization. What must the organization do well to be effective? Is the weapon system stationary, or is mobility required? Stationary systems are more likely to use a functional structure, but mobile systems will require some elements to be organized into self-sufficient units. What is the time frame for response? How important is the training and development of human resources? Is safety, stability, and

top down control paramount? Is coordination with other Air Force units required? Through this type of analysis the group can define the boundaries of required organizational activities and competencies. Once the task and mission are clarified, the new organization's operating goals can be listed in priority order to indicate which goals are most critical to the new structure.

Another valuable step for defining overall mission and task is to examine the situational factors as illustrated in Exhibit 27. These situational factors are the same as described earlier in this guide. It is important to systematically think about each factor and how it might relate to structure. For example, what is the nature of the production technology? Is it routine or nonroutine, simple or sophisticated? Is the environment highly uncertain and rapidly changing. And what about human resources? Do workers rank high or low on task relevant maturity? Is there sufficient manpower or are people in short supply? What leadership approach will be relevant? Participative or nonparticipative? And what about goals? Will the operating goals require the organization to give priority to efficiency? To innovation? To mobility? To the development of team work? The answers to these questions will help designers understand the context of the new organization. Answers to these questions also will help designers compare the new organization to other organizations that may serve as a prototype.

Exhibit 27 about here

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3. Define required subtasks. This procedure involves the definition of departments and specialties required for organization performance. What departments are required? A new missile system would require maintenance skills as well as operational departments. Support units for personnel,

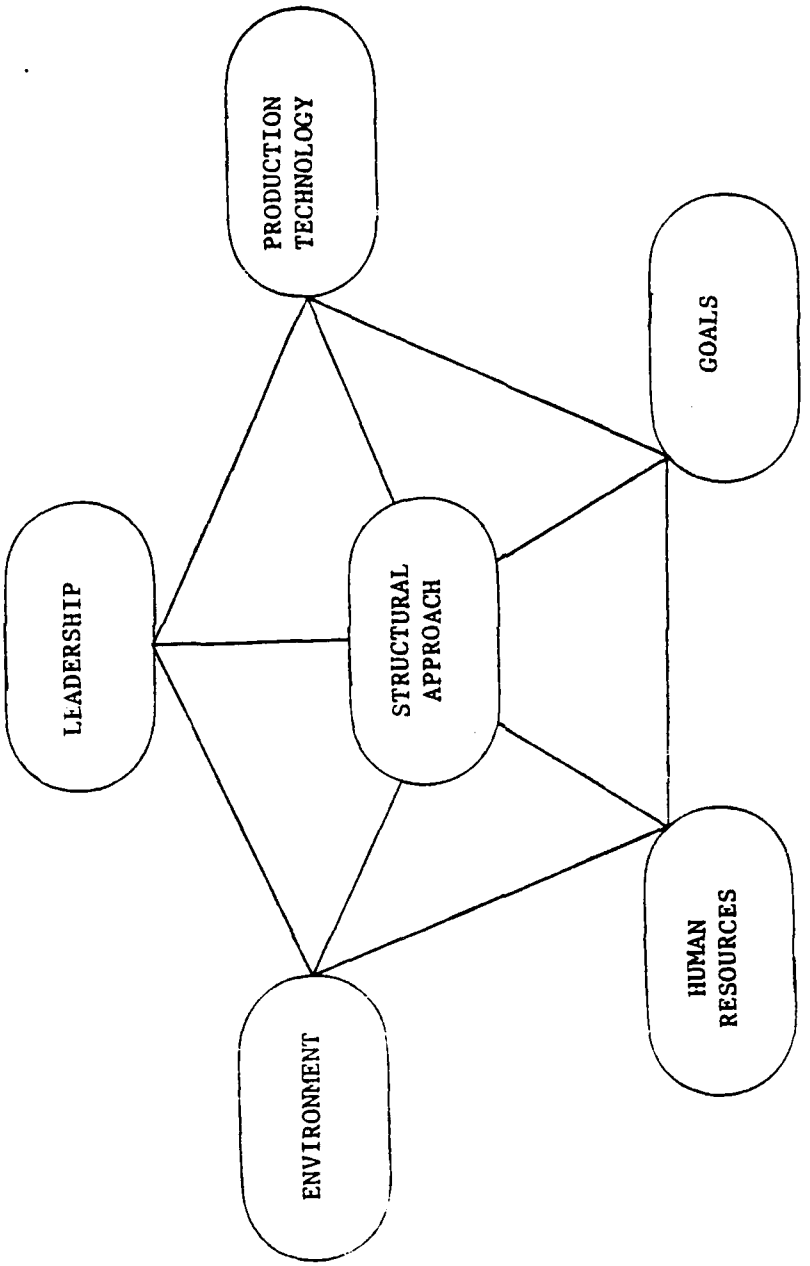


Exhibit 27. Situational Factors to Evaluate When Designing a New Organization.

administration, and finance would be required. Defining the departments and specialties enables decisions to be made about manpower requirements and the number and types of departments needed.

4. Look for prototypes. A prototype is an organizational model that can be drawn from similar organizations. Prototypes provide valuable information for defining departments and subtasks, manpower requirements, and overall scope and mission. However, prototypes must be used with caution. Small differences in mission or technology can lead to major differences in preferred organization structure. For example, the GLCM is a missile, and one prototype organization would be to look at the organization of other missile units in the Air Force inventory. Studying the organizing structure for Minuteman missiles provides some indication of required specialties for maintenance and operation. But GLCM's overall structure will not be the same because the Minuteman is a stationary missile. GLCM has an operational goal of mobility. Additionally, GLCM operates in a vastly different environment than the Minuteman missile. Another prototype would a mobile TAC aircraft wing. Drawing ideas from several prototypes enables designers to pick the best ideas. Designers should not focus on a single obvious similarity between prototype and new organization. Defining the new organization's mission and operational goals is an important step before seeking prototypes. Designers should consider each element in Exhibit 27, including human resource limitations, technology, environment, and goals--before developing the proposed structure.

5. Design, pilot, and implement the proposed structure. The design team must hammer out a proposed organization structure. This process will involve the integration of diverse, often conflicting, ideas and opinions. Once the proposed organization chart is defined, it should be presented to managers who

have experience with the proposed organization or with similar organizations. The chart and the logic underlying the proposed structure can be explained. Feedback and questions from the discussant will challenge the team's thinking and refine the logic of the structure. After this procedure leads to an agreed upon structure, organization leaders should meet and consider a series of "What if" situations, and play devil's advocate with the proposed structure. The next step is implementation. Remember: the structure will not be perfect. It is the team's best guess, and modifications will have to be made. Implementation will provide a basis for the organization to start operations, and implementation will provide new knowledge about the structure's adequacy.

6. Adopt a trial and error philosophy. The entire sequence of activities associated with designing and operating a new organization should be infused with a trial and error philosophy. The new organization has to learn as it goes along. The proposed structure, just like a five year plan, is a useful guideline but will not be correct in its details. Both the designers and managers of the new organization should think of themselves as experimenting. In its early life the organization is almost self designing. Adjustments in structure will have to be made as problems are confronted. Some departments may have too few personnel, some activities may not report to the right manager, and unexpected problems will certainly arise. In some cases managers may ignore the proposed organization structure and preferring instead to design reporting relationships around the tasks to be performed. This is okay. The proposed structure still provided a guideline and direction to get the organization started. Designers can redraw the structure based upon what managers found to work.

7. Fine tune the structure. The last step is to provide finishing

adjustments to structure. Final decisions are made about items such as whether maintenance should be designed into self-sufficient units, and whether teams, task forces, or liaison officers are needed to ensure the organization operates as a cohesive unit. Specific problems will surface, such as managers not being consulted or informed as needed, ambiguity about who is responsible for certain decisions, or disagreement about the division of labor. These issues can be addressed by a design team follow up that explicitly confronts issues of position responsibility, decision making responsibility, and techniques for coordination across departments. The follow up and fine tuning can also use techniques from the Organizational Responsibility Guide (ORG) described in the previous section.

Participation is the Key

The material in this section has described a procedure for designing a structure for a brand new organization, and the ORG technique for clarifying task and decision responsibility for a simple redesign. In both situations, decision responsibility, and reporting relationships may be unclear. In the case of a new organization for a new weapon system, it is essential that the organization design be the result of a team effort. Team members provide a breadth of experience. Moreover, team members should seek the participation of managers who have experience with the proposed organization and who have experience in similar organizations. This breadth of participation enables the design team to create a structure that can be a positive force to help the new organization become operational.

The Organizational Responsibility Guide is used when an existing or redesigned organization structure is confusing and unclear. The technique forces participants to be clear and concise about tasks/decision problem


...AND WE ARE FIRMLY OPPOSED TO ANY FORM OF GROUPTHINK.
RIGHT, COL!
RIGHT, COL!
Right, Col!
Right, Col!
RIGHT, COL!

areas, it creates a shared vocabulary about types of relationships among positions, and it establishes a procedure for renegotiating responsibilities and roles as needed.

The strongest feature of the charting technique is that it draws upon the knowledge and resources of people who have experience within the focal organization. Managers from several levels can participate in the ORG process depending upon the tasks or decisions to be analyzed. Group discussion provides a way to clearly define problem areas, to ballot and tabulate findings, and to diagnose and give feedback to participants. Group members collectively clarify and resolve differences about perceived structure and responsibilities. The ORG makes explicit the task responsibilities within the organization and the relationships that exist across departments and positions. It creates a group understanding that can only be achieved through participation of the key actors who have firsthand experience and information, and who are involved in the tasks at hand.

The techniques for planning the structure of a new organization and for charting the ORG for an existing structure have been used in many organizations, large and small, industry and government. These techniques have proved a useful aid to solving problems pertaining to overall organization design, specific reporting relationships, and coordination requirements across divisions.

X. ANSWERS TO FREQUENTLY ASKED QUESTIONS ABOUT ORGANIZING

One purpose of this guide is to answer basic questions that commanders ask about Air Force organization structures. The following questions and answers summarize many of the key points from the guide and touch upon other issues not covered in the guide.

Question 1: What is the best structural approach to use in the Air Force?

There is not one best organization structure to use in the Air Force. Structures come in many forms. The correct structure depends on the circumstances of the wing or unit as reflected in operational goals, production technology, human resources, environment and leadership. Since there are many missions and technologies in the Air Force, a different structure applies to each situation. The value of organization structure is that it is tailored to the specific needs of the organization.

Question 2: I've heard the term "nontraditional" organization structures in the Air Force. What does that mean?

Traditional structures are essentially a functional structure, they are often called "line and staff," because some departments are line functions and others are staff support functions. "Nontraditional" structures refer to the emergence of lateral relationships in Air Force organizations. Because of increasing complexity of technology, changing environments, scarce human


CAN YOU PUT A CURSE ON A BUREAUCRAT?
10-13
JUST FILL OUT THIS FORM IN TRIPLICATE AND I'LL TAKE IT TO THE COMMITTEE AND LET YOU KNOW IN THREE WEEKS
THEY'VE TAKEN OVER THE WORLD!

resources, and mission requirements, greater coordination is needed than the traditional line and staff structure can provide. For these reasons the matrix structure evolved, with its dual reporting relationships to manage the dual pressures for innovation and efficiency in AFSC. Emphasis on decentralization through the use of teams, task forces, colocation, liaison officers, and dual reporting enable greater coordination across functions and between geographically dispersed units in the Air Force. Although the term "nontraditional" is still used to describe these structural variations, they have become a major part of the Air Force way of organizing.

Question 3: Are current structures in the Air Force suited to the mission, technology, and human resource constraints?

Yes, organization structures in the Air Force are generally suited to their situation. At the wing level the organization structure in each MAJCOM reflects the general requirements of mission, production technology, and human resources. The matrix structure has some advantages for the comparatively fluid yet complex research and development environment in AFSC. The self-sufficient maintenance approach (AFR 66-5) is suited to the mobilization and human resource requirements in TAC. A functional approach to maintenance (AFR 66-1) is suited to the maintenance needs in ATC and SAC. The functional structure with lateral relationships, such as teams, task forces, and face-to-face discussions, is suited to the complex logistics needs of AFLC.

Although the general thrust of structure applications is good, some specific applications indicate problems. There are points of potential dysfunction in some areas. For example, as described in Chapters 7 and 8, the structure doesn't always fit the situation. The matrix structure in AFSC is not designed to respond to perceived uncertainty in the user sector of the external environment. Moreover, the AFSC matrix structure does not seem

tailored to perceived uncertainty in the resource sector either. In maintenance deputates within TAC, perceived requirements for adaptability is low, suggesting the 66-5 structure is designed to respond to uncertainty in the user sector of the environment and encourage team development among maintenance personnel. Also, 66-5 causes difficulties with training because maintenance specialists have less opportunity to acquire in-depth expertise.

Question 4: AFSC used to have a self-sufficient program structure. Is it possible to return to the program structure?

In the old days under the self-sufficient program structure, management of weapon systems acquisition seemed easier, and some people believe new weapon systems were developed more quickly. The pure program structure was "ideal" for AFSC because each weapon system SPO was self-sufficient, with all necessary resources. Each "small corporation" was easy to manage and was able to focus on its mission. The big problem was cost. There was duplication of scarce human resources across programs. Moreover, technical specialists worked only on one weapon system and their skills became outmoded because they didn't affiliate with engineers on other projects. The matrix structure required specialists to report to a functional director as well as to a program director. This encouraged more efficient allocation of specialists across programs, and provided a functional "home" for the specialists. Because of resource constraints it is not likely that weapon system acquisition will be accomplished through the use of self-sufficient program units in the foreseeable future.

Question 5: In the maintenance area, what is the difference between 66-1 and 66-5?

The structures for aircraft maintenance are described in Chapter 8 of this guide. In brief, 66-1 is a functional approach to maintenance.

Maintenance specialists are assigned to functional squadrons (FMS, OMS), and they work on all aircraft in their wing. Job control is the agency that coordinates work orders for specialists across all squadrons.

AFR 66-5 is a program or self-sufficient approach to structure. The maintenance directorate under 66-5 would have three squadrons. The first is the Aircraft Generation Squadron (AGS) charged with recovery, flight line repairs, and launching of aircraft. AGS combines specialties that previously would have been found in AMS, FMS, and MMS. The second squadron is the component repair squadron (CRS) which repairs electronic systems and engines that are removed from the aircraft. Here several specialists from AMS and FMS are grouped together in a job shop. The third squadron is equipment maintenance (EM), which is charged with maintaining ground support equipment, weapon storage, and major inspections. It groups together specialists from OMS, FMS, and MMS.

The big difference is that 66-5 squadrons contain diverse specialist skills to perform all aspects of a maintenance requirement, while 66-1 squadrons contain specialists who have similar skills. The 66-5 structure provides smaller, self-contained teams that are suited to rapid deployment in an emergency, and squadrons have the potential to produce more sorties with minimum downtime. The 66-1 structure allows for greater depth of specialization among maintenance personnel, although response time is reduced. The preferred structure depends on mission. For a very stable environment without mobility requirements, 66-1 may be the most efficient. When rapid mobilization is required, the 66-5 approach seems to have several advantages.

Question 6: TAC adopted 66-5. Should SAC also adopt 66-5?

This question cannot be answered unequivocally. The adoption of 66-5 by TAC generated controversy among maintenance personnel. AFR 66-5 has worked

because it fit the situation. TAC leadership wanted to create a structure that enabled personnel to identify with a self-sufficient team, and the TAC mission requires the rapid deployment of aircraft flights. SAC, on the other hand, has a mission that does not require mobility, aircraft are larger and operate from the same location, and there is no perceived need to create self-sufficient maintenance groups. TAC has been successful with 66-5 because the structure fits TAC's needs. The same structure probably would not be as effective in SAC, although it could probably be imposed by SAC commanders and made to work. The advantages to SAC would be less than for TAC.

Question 7: What about using contract arrangements to provide maintenance?

Contract arrangements have been used in some Air Force situations, namely ATC and MAC. Contracting maintenance involves a major change in human resources, because civilians typically have longer tenure, higher technical knowledge, and more on-the-job experience. This leads to a high quality maintenance service using fewer people. Contracting works well when the organization is stable and the use of civilians does not interfere with the wartime mission. The negative side of using contract maintenance is limited operational goals and loss of flexibility. Mobilization with civilians would be difficult, and structural and other adaptations cannot be easily generated with a civilian workforce.

Question 8: Could a matrix structure be used in maintenance organizations to achieve better utilization of scarce technical personnel?

This would not work. The matrix approach helped AFSC utilize technical personnel, but AFSC was previously organized into a pure program structure that required many personnel. Most maintenance units are organized into a

functional structure, which is more efficient than a matrix structure. Trying to use the matrix in maintenance would just complicate things. The 66-5 organization is now organized into partial self-sufficient units, so specialists have easy access to others in their specialty. Another problem is that matrix structure is very complex with meetings and lateral relationships. Maintenance personnel often lack task-related maturity, and have little experience. Coping with lateral relationships would provide even less time for technical specialists to concentrate on fixing aircraft. The matrix structure will not solve the problems of scarce personnel in maintenance organizations.

Question 9: I don't understand what you mean by "structure is a tool." I'm stuck with the organization chart that was given to me by the Air Force.

The structure given to you contains prescribed positions and vertical reporting relationships. This structure reflects basic mission requirements and defines which departments and tasks are needed. But the structure is not carved in granite. Commanders can make modifications in the vertical structure, such as combining certain tasks to achieve greater efficiency. Managers can also design lateral relationships. Lateral structures typically are not written on the organization chart, so a task force, committee, or project officer can be used to create synergy, collaboration, and task accomplishment. Most of the commander's flexibility comes through lateral rather than vertical changes. Moreover, the same vertical structure can be used in different ways. One commander may wish all decisions centralized to the top of the vertical structure, and another commander may wish to decentralize. The commander's leadership style and philosophy is an important

component of how subordinates perceive they are supposed to behave within the established structure.

Question 10: In my experience it is people, not structure, that counts.

There is no doubt that good people can make a poor structure work, and poor people can ruin a good structure. Structure is just one tool in a commander's tool kit. The ability to motivate people is another important tool. The important thing to remember about structure is that it is a medium through which the commander can extend his leadership style, and it is a means to utilize human resources. Emphasis on vertical reporting channels creates one form of motivation in the organization, and the creation of a team or task force to achieve coordination creates another form of motivation and collaboration. Indeed, the design of structure provides an important signal to employees that they count. Structure provides a way to extend the commander's philosophy without having to be present in every department at all times to ensure the philosophy is implemented.

Question 11: What do I need to know about structure to solve problems in my unit?

It's important to approach structure with the understanding that wholesale changes are typically not needed. Major reorganizations are rare. Most structural improvements are made through small increments. Perhaps two small units can be collapsed into one for a minor savings. Or perhaps the chain of command can be changed slightly to reflect a different reporting relationship. Air Force managers also are encouraged to explore some of the informal structural alternatives as a way to fine tune the performance of their units. Most of these alternatives pertain to lateral relationships, and include the use of teams, task forces, project managers, liaison officers, and automated information systems. Managers have discretion over these structural

devices because they are not on the organizational chart. These techniques can be used to selectively improve communication and coordination and create a sense of teamwork and collaboration.

Question 12: What is the Model Installation Program?

The Model Installation Program (MIP) tested a program in which selected base commanders were given more control over such things as budget and structure. The purpose of MIP is to decentralize more decision making to the base level. The MIP gave commanders the freedom to reorganize bases to get more efficient use of resources, and to keep any savings. Thus departments can be consolidated, or money can be used to buy equipment locally if the commander deems it more efficient. The MIP is helping cut through unnecessary layers of bureaucratic regulation. Ideas that work will be transferred and implemented in other sections of the Air Force.

Question 13: In my area, safety is a critical issue because of nuclear weapons. How does something like this affect organization structure?

The enormous potential loss associated with a nuclear accident typically requires a functional structure with central control. When organizational activities present high risk, so that standardization of procedures is essential, then centralized decision making should be used. The centralized structure can enforce the guidelines and control developed by Air Force policy makers and can be enforced uniformly throughout the Air Force.

Question 14: Our biggest problem is scarcity of people. We simply don't have enough people to do the job. Which structure should we use?

Organization structure is not a substitute for manpower. It is not accurate to assume there is a form of structure that can solve manpower

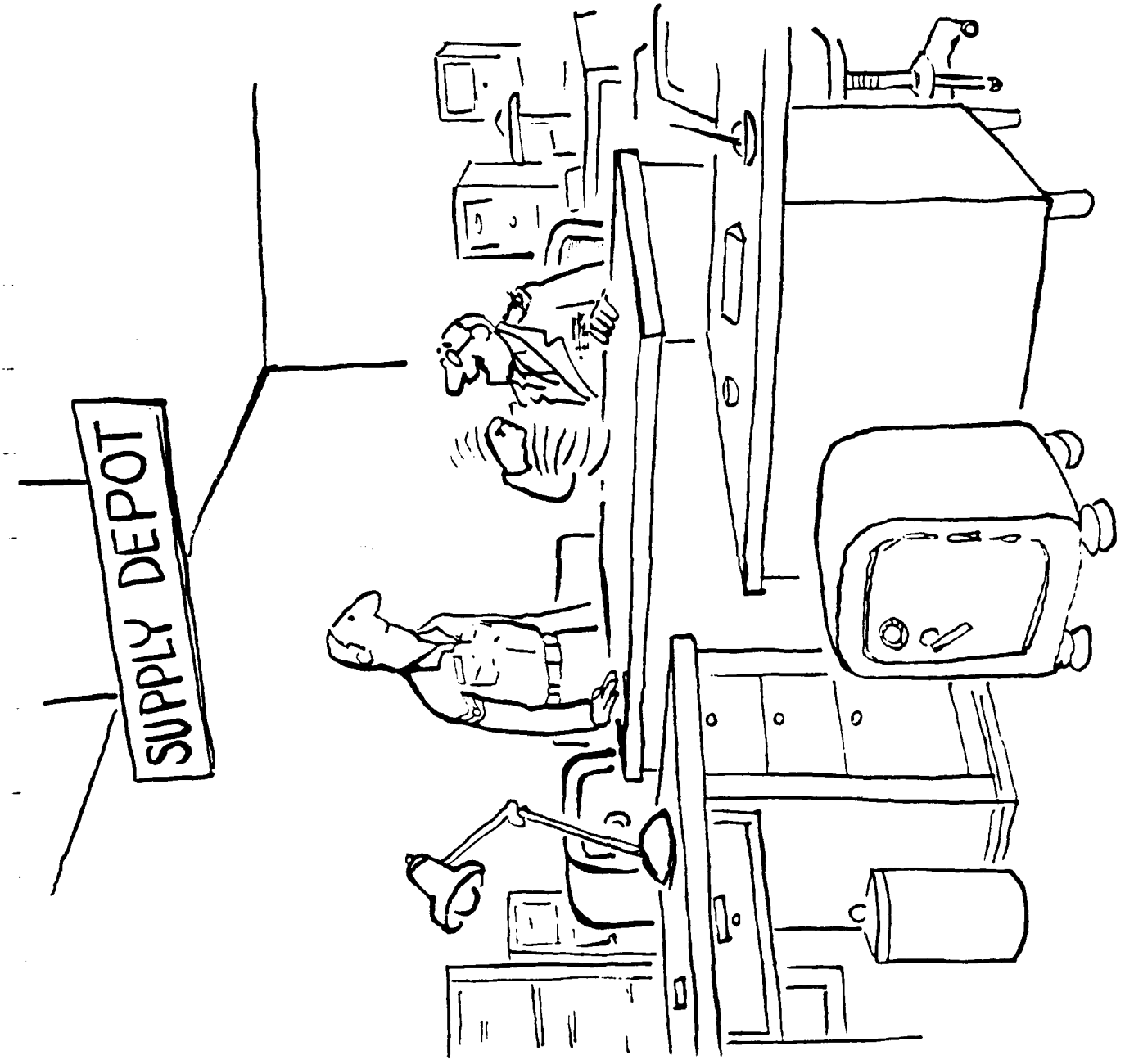
problems. In some situations, the correct structure can achieve greater utilization of existing manpower. For example, the matrix structure makes better use of manpower than the program structure, so AFSC managers say that bases now use fewer specialists than under a program structure. The functional structure is somewhat more efficient than hybrid or program structures because all people with the same skill are grouped together. However, the purpose of structure is to organize available manpower to accomplish tasks in the most effective way. Without manpower, organizational structure is a non-issue. The solution to not having enough people is to either obtain more people or reduce the scope of the organizational task. Structure is not a substitute for manpower.

Question 15: How do structures in the Air Force compare to structures in the business world?

They are very similar. The Air Force is a large organization with diverse units and missions. In many respects the diversity reflects the diversity in the business world. The business world uses functional, self-sufficient, matrix, and hybrid structures. Most corporations make extensive use of lateral relationships for coordination and adaptation. All of these structures are also used in the Air Force, depending upon the mission and circumstances of the specific unit. The Air Force has adopted new ideas on structure to accomplish Air Force missions, just as in the business world.

Question 16: We have a few people who have dual reporting responsibilities. The dual reporting is not drawn on the organization chart, but essentially some people report to two bosses. Should we get rid of dual reporting relationships?

Probably not. Dual reporting violates the unity of command principle,



"Now, this one has a nice authoritative tone."

but in today's large, complex Air Force, dual reporting often is necessary. Dual reporting is a way to achieve coordination between units that are geographically separate, yet have responsibilities that converge upon a single individual. That individual with two bosses becomes the coordinator. Without dual reporting, coordination would be lost because the individual would respond only to one set of requirements. A couple of things can make the dual reporting relationship easier to handle. First, provide effected managers with training so they understand why dual reporting exists and how to cope with it. The second thing is to set up a dual appraisal system consistent with the authority of the two bosses. If the two bosses are expected to have equal authority over the subordinate, then their influence on the formal appraisal should be equal. If one should have primary authority, this should also be a part of the dual appraisal process. Dual reporting is described in more detail in Chapter 6 of this guide.

Question 17: How do we know whether we have a problem with organization structure?

There are several indications that structure may be causing a problem for the organization. Briefly, they are as follows.

A. *The organization is undergoing a major change in production technology, mission, environment, leadership, or human resources.* These forces determine the correct structure, and changes in any one of them may require a change in structure. If changes are gradual, the realization that a new structure is needed may not occur until other symptoms are revealed.

B. *The organization does not respond quickly or innovatively when needed.* One reason for lack of response is that employees are focused on their own tasks and do not coordinate across departments. Organizational responsiveness requires that the organization react as a coordinated whole, so

lateral relationships must be implemented so that departments cooperate with one another.

C. *Too much conflict is evident.* Departments may be pursuing goals that are at cross purposes and may be unwilling to compromise. When people at the interface between departments meet to discuss problems or joint responsibility, they may disagree. Operating goals and reporting relationships may be cloudy, and the structure has not provided a way to deal with conflicting goals and priorities.

D. *Managerial decision making may be slow or lacking in quality.* Managers at the top of the hierarchy may be overloaded with decisions. They may be controlling too tightly and require every issue to be resolved through formal channels. Slow decisions may mean that information is not transmitted to people in the best position to make decisions. The absence of information reduces decision timeliness and quality. In this case more delegation of authority and better lateral relationships are needed.

E. *Employee motivation and morale may be depressed.* Employees may perceive that decisions are inconsistent and arbitrary. Employees also may be subject to competing requests that reflect diverse purposes and goals. Employees may not achieve cooperation from other departments as needed to perform their tasks. Lower level employees may be frustrated and perceive they have little responsibility and little opportunity for advancement when structure is incorrect.

Question 18: <u>The major problem we have is that managers frequently disagree about who has responsibility for specific decisions. How can we solve this problem?</u>

This problem is ideal for the Organizational Responsibility Guide described in Chapter 9. The ORG uses a procedure that asks each manager to

state who should have responsibility, approval, coordination, and information for important decisions. By writing down these judgments and pooling the responses, managers have a way to discuss different perceptions and come to agreement about decision responsibility. The ORG is useful for clarifying decision and task responsibility when organizations have undergone major changes or when managers disagree about their responsibility and activity domains.

Question 19: If I have a major problem with organizing, where can I get help?

The purpose of this guide is to provide some basic ideas to use in developing organization structures. A specific focal point for organizational consulting no longer exists in the Air Force. The Leadership and Management Development Center's consulting group has been eliminated. However, the USAFA has developed some expertise during the research leading to this manuscript. Additionally, contract help from outside the Air Force may be obtained as a logical alternative.

Three books providing different but interesting and valuable perspectives on organizing are:

A. *Organization Design* by Jay Galbraith. (Addison-Wesley, 1977.)

B. *Structure in Fives: Designing Effective Organizations,* by Henry Mintzberg. (Prentice-Hall, 1983.)

C. *Organization: A Guide to Problems and Practice,* 2nd edition, by John Child. (Harper & Row, 1984.)

Question 20: Where can I get more information on using the Organizational Responsibility Guide?

The Organizational Responsibility Guide comes from a body of research

into responsibility charting. There is no book on this topic, but articles which provide useful perspectives on responsibility charting are:

A. Joseph P. McCann and Thomas N. Gilmore, "Diagnosing Organizational Decision Making Through Responsibility Charting," *Sloan Management Review*, Vol. 24, No. 2 (Winter, 1983), pp. 3-15.

B. Robert D. Melcher, "Roles and Relationships: Clarifying the Manager's Job," *Personnel* (May-June, 1967), pp. 33-41.

C. Alfred G. Larke, "Linear Responsibility Chart--New Tool for Executive Control," *Dun's Review and Modern Industry* (September, 1954), pp. 46-50.

Question 21: <u>The Organizational Responsibility Guide looks interesting, but when should I use it</u>?

The procedures for utilizing the Organizational Responsibility Guide require time and resources, and should not be used unless there is a specific problem to be solved. Some useful applications of the Organizational Responsibility Guide are as follows:

(1) To clarify organizational responsibilities with respect to formal authority and coordination relationships.

(2) To spot ambiguity and confusion, different expectations, and to correct errors in reporting relationships.

(3) To facilitate the implementation of new duties and authorities when reorganization occurs.

(4) To compare organizational methods and functioning of similar units in different locations. The ORG may reveal why some units perform better than others despite similarities in technology, mission, and human resources.

Footnotes

1. Tom Peters and Nancy Austin, A Passion for Excellence (New York: Random House, 1985), pp. 48-49.
2. Ibid., p. 238.
3. Harold Geneen with Alvin Moscow, Managing (Garden City, NY: Doubleday, 1984), pp. 81-82.
4. Lee Iacocca with William Novac, Iacocca: An Autobiography (New York: Bantam Books, 1984), pp. 152-153.
5. Paul R. Lawrence and Jay W. Lorsch, "New Management Job: The Integrator," Harvard Business Review, (November-December, 1967), p. 226.
6. Ibid., p. 229.
7. This discussion was adapted from Lawrence and Lorsch, "New Management Job: The Integrator," pp. 222-231.
8. Andrew S. Grove, High Output Management (New York: Random House, 1983), p. 132.